OCTOBER 24, 1959
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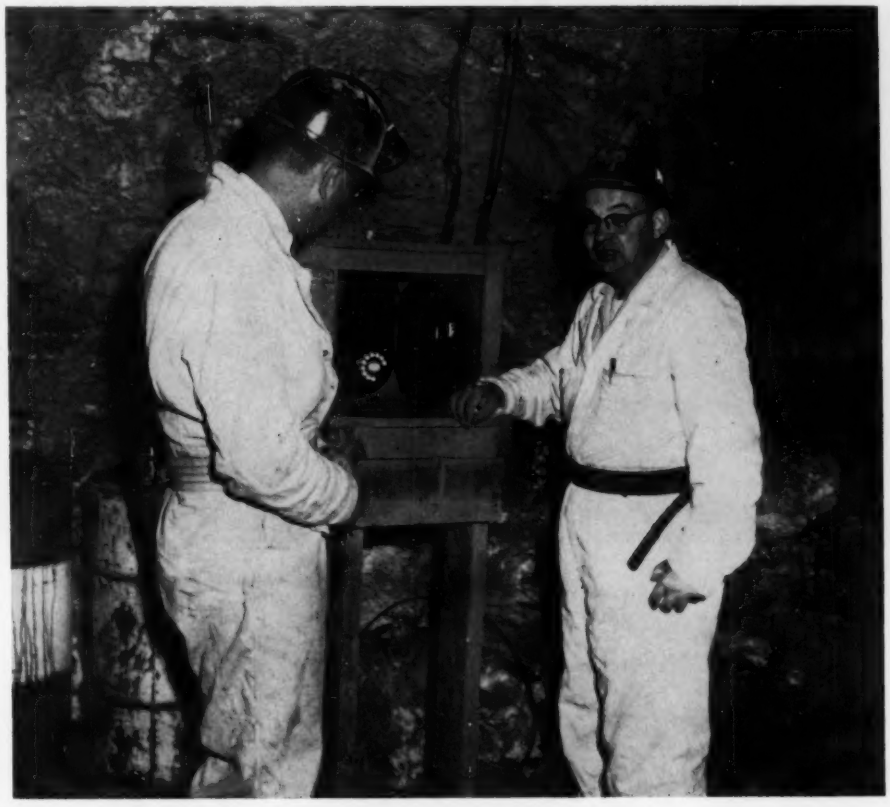
# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
SINCE 1901



**MINE TELEPHONE**

**Telephone installed in U. S. Gypsum's 75-foot Ohio mine by the Northern Ohio Telephone Co. The instrument is located one mile from the PBX. J. E. Peltier (left) and D. G. Danielson of Gypsum company inspect the telephone.**

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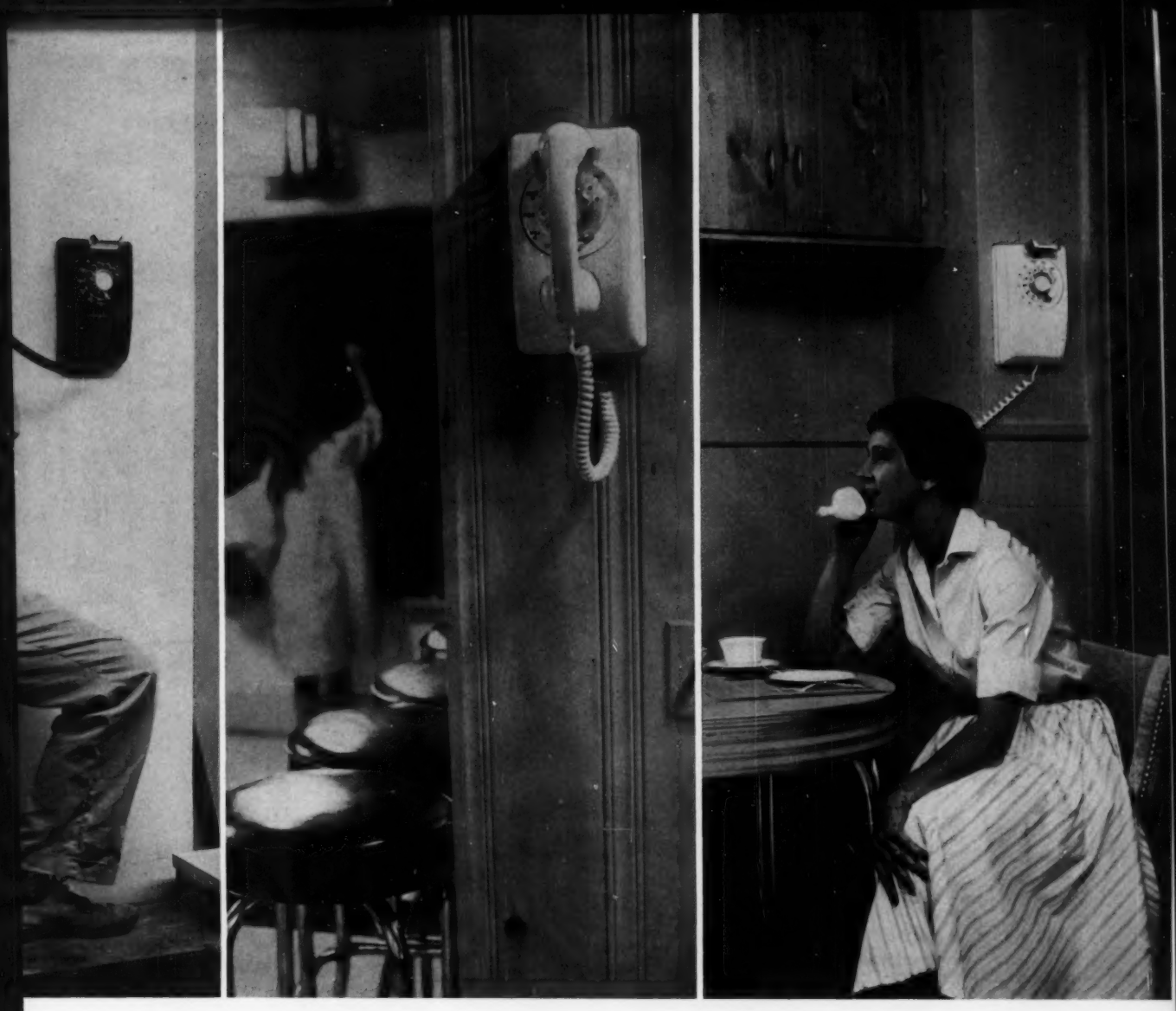
**USITA CONVENTION REPORT**

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

# New plan for extra revenue!



Upstairs . . . downstairs . . . all around the town—there's a fast-growing market for extension telephones *in color.*

You can earn extra revenue by installing extension phones—*less ringer*—and reap the benefit of our low-cost 1553-W Wall Telephone *plus* high monthly return on your investment!

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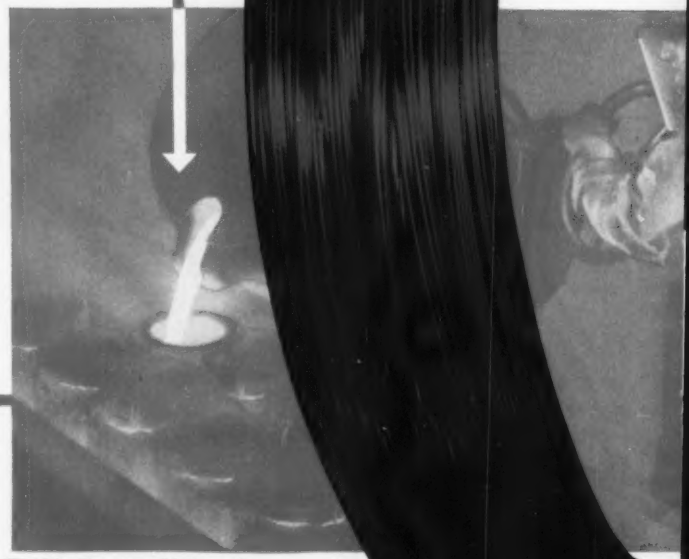
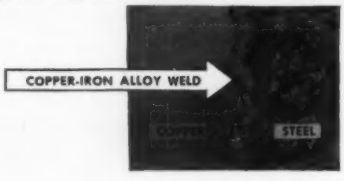


*This microphotograph of the Molten-Weld in Copperweld shows how the grains of copper and steel interlock to form a permanent, continuous weld. Copperweld is the only company producing wire which has this inseparable weld.*



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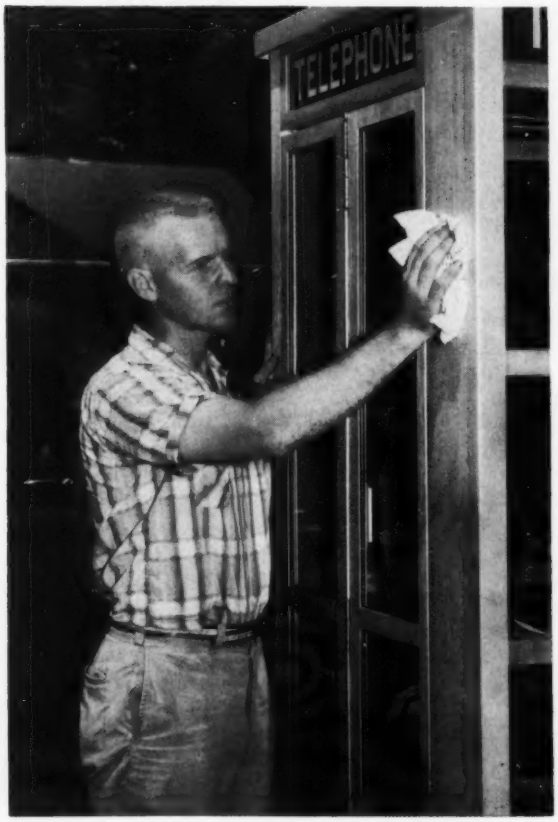
Added revenue from constant traffic at the roomy Alcoa booth in Oquawka, Illinois, pleases E. R. Watson, general commercial manager, Western Illinois Telephone Company.

# "THIS ALCOA BOOTH PAID ITS WAY FROM THE START,"

## *reports E. R. Watson, Western Illinois Telephone Company*

"Two years ago, we set up this Alcoa Aluminum outdoor booth in Oquawka, Illinois—a small fishing and resort town on the Mississippi—and it began paying for itself right from the day it was installed," declared E. R. Watson, general commercial manager for the Western Illinois Telephone Company.




"Maintenance is never a problem with Alcoa booths. A wipe with a damp cloth restores the aluminum to its original sheen, and the high-strength, solid Alcoa construction helps curb vandalism," says Mr. Watson.

"In peak vacation seasons, revenue from this one booth runs as high as $140 a month. People certainly seem to appreciate the convenience of outdoor booths and are attracted to the well-lighted and clean-looking Alcoa models. Like all 19 Alcoa booths on our system, installation was easy and maintenance is no problem. Routine sweeping and occasional washing are all that is ever necessary."

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ALUMINUM COMPANY OF AMERICA

YOUR GUIDE TO THE BEST IN ALUMINUM VALUE

# FLASHES AND PLUGS

**TO SPEAK, OR NOT TO SPEAK?** Speech, a well-known form of communication, on the telephone or off, can be a wonderful thing, everyone will agree. But the frustrations of a *New York Times* reporter, James Reston, while attempting to communicate during a tour of Russia provoked him to write a letter to the author of the little phrase book he carried with him so confidently at the start of his visit.

Here are a few examples of his complaints to the editor of the book on how to say it in Russian:

Phrase No. 194, "I am very glad to meet you," used in Novosibirsk, was so long that by the time he got it out, he and a native were old friends.

Phrase No. 274, for use in a hotel, "Let's go to the dining room," while thought to be a harmless suggestion in English, the writer said, was positively reckless in Russian.

He admitted that he could manage "meat sawlyanka," and because of it, was able to enjoy the soup for 10 days. He also mastered No. 638 for "caviar" and No. 54C, "vodka."

But, he complained, the phrase book committed the grimmest of errors with Phrase No. 422, "Give me long distance, please." Making a long distance call, in Russia, he informed the editor, is a "life career, and more complex than Khrushchev's seven-year plan."

To say the phrase "I want to send a telegram," even casually, brings on an agony such as an American experiences only when making out his income tax report.

However, the book is "right on the beam" with phrase No. 431, "We were disconnected," which apparently, is too true of service in the USSR.

Transport comes in for its share of lament also. Phrase No. 474, "Is there an elevator?" is rash, for, avows the reporter, one can read the unabridged edition of "War and Peace" while waiting for the elevator to stop at his floor.

As for "I want breakfast in my room" and "Will you accept a personal check?"—well, he asks, "Are you kidding?"

•

**WHO'S CIVILIZED?** "Daddy, my teacher wants me to prove that the white man lives better than the Indians did," little Billie said. "Can you help me?"

"I don't think so, son," said his dad. "When the white man took over the country the Indians were running it. At that time there were no taxes. There was no national debt. The women did all the work. How could anybody have improved on a system like that?"

•

**THREE'S A CROWD.** The counselling column of a daily newspaper recently received this letter from a lady in a very lonely spot:

"My sister and I aren't exactly lonely out here. We have each other to talk to. But we need another woman to talk about."

**CHANGE OF ADDRESS**

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.


Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
*Since 1901*

**October 24, 1959**


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**OUTPUT**
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**with full efficiency, full battery protection**

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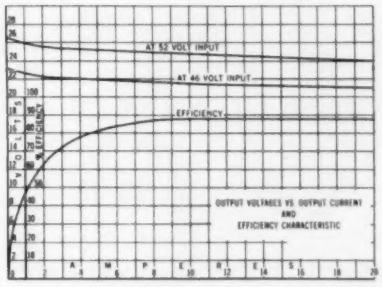


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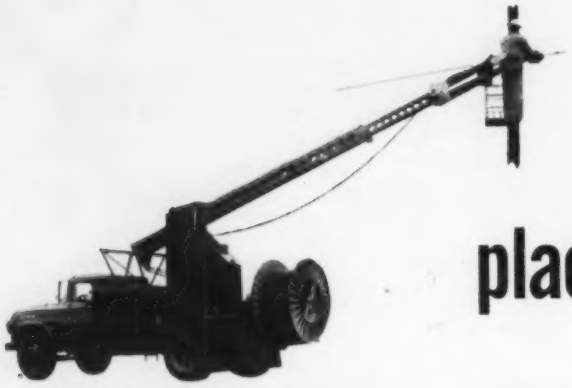

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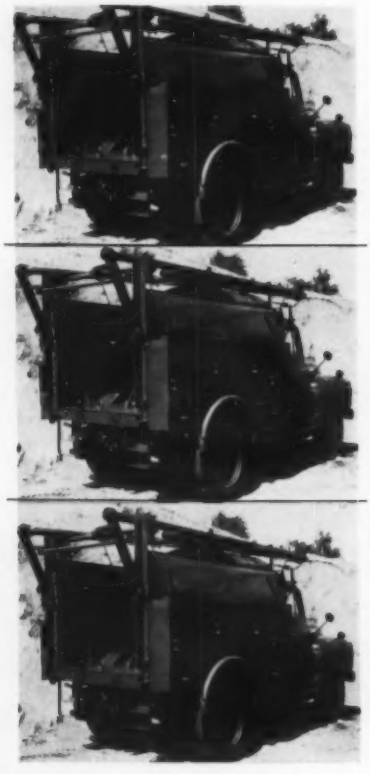

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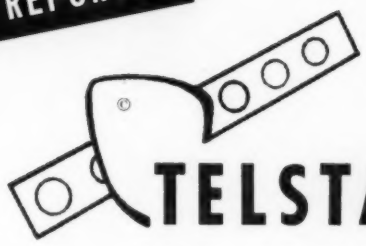

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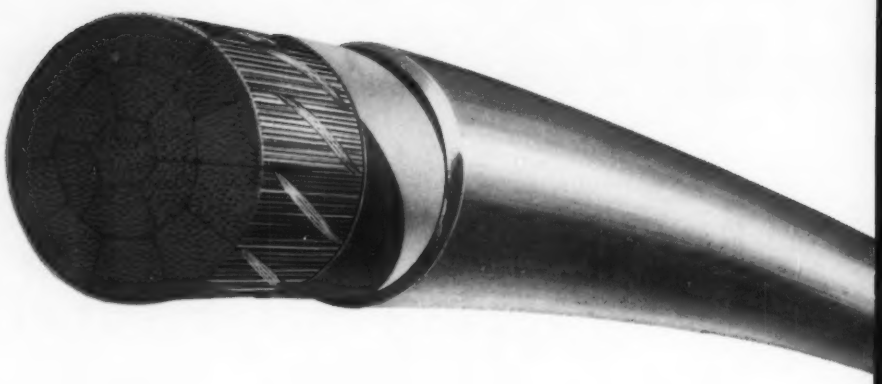

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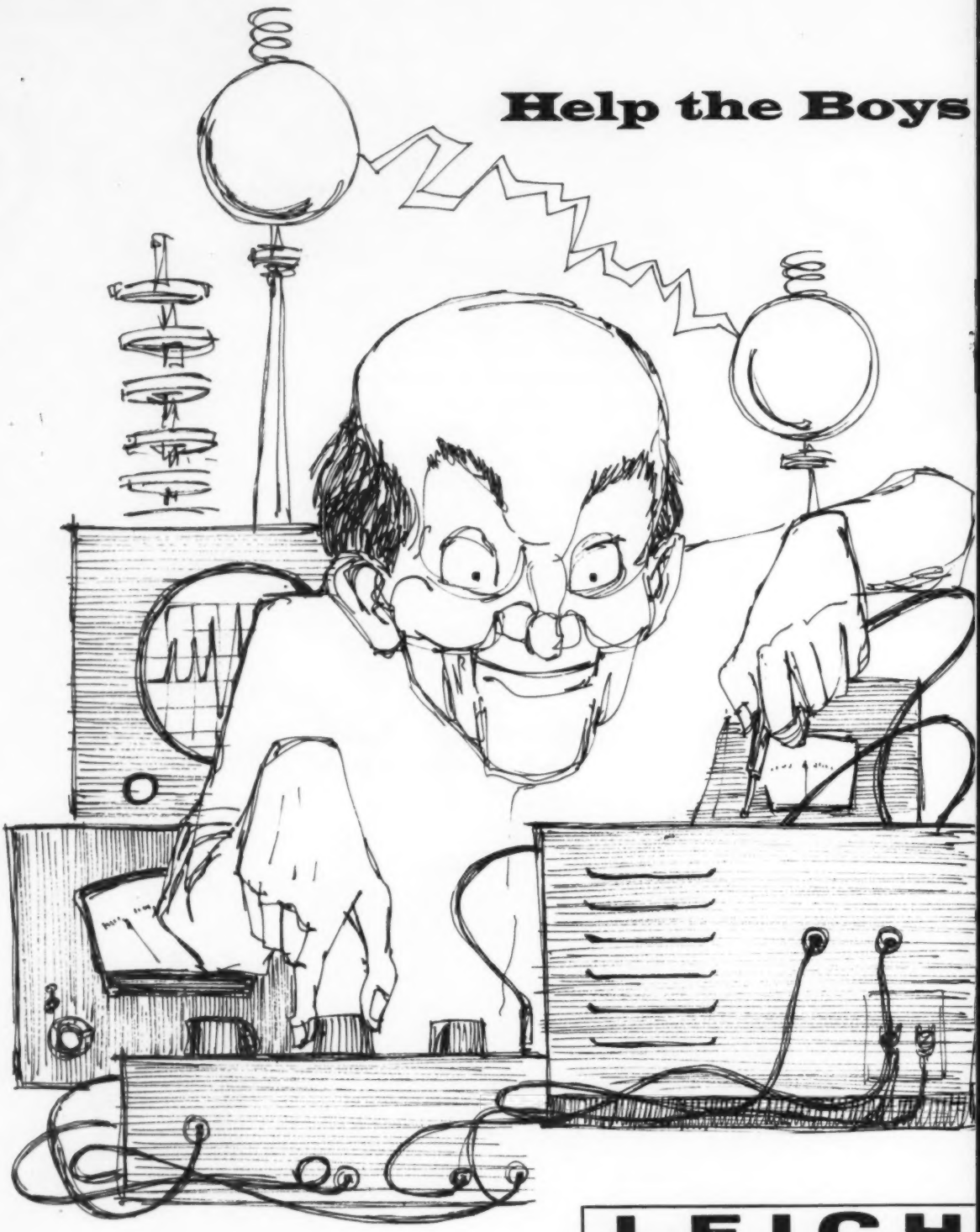
# Help the Boys



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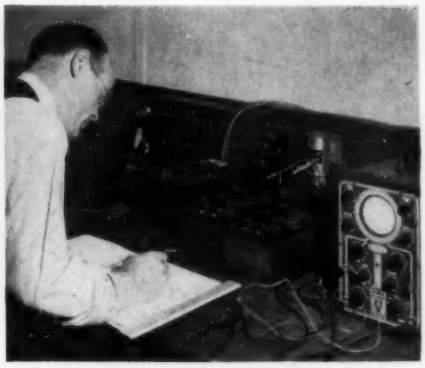

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# FORWARD LOOK

## Theme of USITA Convention

By R. C. RENO

"A FORWARD Look in the Art of Telephony" could very well mark the over-all theme of the 62nd annual convention of the United States Independent Telephone Association, held on Oct. 11 to 14 in Chicago.

The more than 3,000 representatives of the Independent industry attending their national convention heard speakers at departmental conferences and general sessions emphasize the technological and other advances being made in all phases of telephone company operations. They also heard warnings that there is an imperative need for telephone companies to keep abreast of new developments, equipment and techniques if they are to remain strong and successfully meet their responsibility of adequately serving the public.

The "forward look" also was in evidence in the displays of the convention's 102 exhibitors. Never before (at least at the 26 USITA conventions attended by the observer) were there so many revolutionary and progressive developments displayed in the manufacturers' and suppliers' rooms.

Those who attended the USITA convention certainly should have gone home with the conviction that they cannot operate their companies on outmoded standards, nor even maintain the status-quo, but they must move forward with and adopt new developments and techniques in their operations.

After all, new equipment and devices, engineered, developed and exhibited by our manufacturers, reflect the demand for more and better communications service on the part of the public—otherwise there would be no need to introduce new techniques. And, telephone companies must see that the improved service made possible by new developments is made available to the public.

Those attending the convention also were warned by two nationally-known speakers that business men, including those in public utilities, must look beyond their own company interests toward the public interest, as reflected in local, state and national political affairs.

This warning was expressed by Arthur H. "Red" Motley, president of *Parade Magazine*, and George Murphy, vice president of Desilu Productions, Hollywood, Cal., who has devoted much of his time in national political affairs and to the protection of the American way of life.

Besides its own board of directors, every company in America has a "senior board of directors," Mr. Motley said. He continued:

"These are the elected and appointed public officials, and the legislators, who make so many of the rules under which all business operates.

"On every level—city, county, state, national—these 'senior directors' help to shape the fate of business.

"Companies choose their directors with the greatest care. Isn't there even greater reason to choose the members of our 'senior boards' with at least equal care?

"It is important for America, and it is important for business, that businessmen in every field of activity become increasingly interested in the workings of practical politics in their home communities and states.

"It is not enough to be a 'checkbook citizen'—to give liberally to the party of your choice, to vote for candidates, and to let your public responsibilities go at that."

He pointed out that the telephone industry is regulated by public agencies, and is thus especially sensitive to participation in political action. He said further:

"Even though telephone men are understandably reluctant to appear to be engaging in politics for purely corporate ends, they must recognize that government affects their business in many more ways than merely in rate and service regulation.

"They are affected, like all business, by government decisions on basic economic policy, by welfare legislation, by labor and trade legislation.

"As citizens, telephone men ought to express their views on the philosophy and the goals of government."

Mr. Motley declared that businessmen should speak through the parties of their personal choice.

"Each party helps select members of business' 'senior board of directors,'" he said. "Business should not align itself with a single party. It should be heard in both great national parties."

Similarly, he said, the scope of business influence should extend into every area of government, and should not be limited solely to economic problems in which business interest may seem to be paramount. He stated:

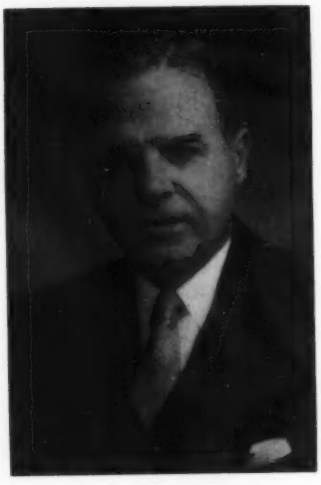
"It is time that businessmen overcome the distaste for political activity which has marked them since the days of the great depression. The country needs their active participation in choosing good candidates, in electing sound men to public office, and in helping to steer our national policies into

F. B. McHENRY
President

C. C. PEARCE
First Vice President

F. G. LaPRADE
Second Vice President

E. C. GATES
Third Vice President



C. S. BAILEY
Executive Vice President

C. D. BROREIN
Treasurer

G. C. RICHERT
Secretary

channels which are constructive, lasting and enlightened."

Mr. Motley cited the work of the U. S. Chamber of Commerce in making available "action courses" designed to teach businessmen the essentials of political action.

These courses, now used by several thousand companies and business groups throughout the nation, have been approved by both political parties, he said.

"They are not designed to create a third 'business party,'" he said, "but to help influence our existing parties.

"I am confident that they will add to the richness and the wholesomeness of American political life, not only on the elections of 1960, but for many years to come."

"If our system fails—all of civilization goes back thousands of years," George Murphy told the convention, as he also urged them to be active in political affairs.

In his talk, "Be Enlightened, Beware," he stressed that we must make certain of our representation in Congress and that there is a need for political action by citizens starting at the local level.

"We forget too soon, sometimes," he pointed out. To preserve the past freedom of opportunity for the present, Mr. Murphy stated that Americans must participate in civic affairs.

There seems to be, he said, "a well-designed plan to break down the moral and organized structure, and constitutional government, in our country."

One movement he decries is the one to split our "country into classes, bringing race consciousness to the forefront . . . which can create a civilization of individuals so self-conscious,

they can't get along with themselves."

The need to know our political leaders also pressed Mr. Murphy into the political arena. One time in cross-examining a high government official, about his beliefs, Mr. Murphy said he found the man's answers disturbing ones. It made him feel that most people don't really know anything about those who are in a position to shape the political and economical destiny of our country.

He said citizens must school themselves in how to read newspapers. They must recognize that news commentators are biased and should know just what the biases of these men are.

Also, the backgrounds and beliefs of individuals should be looked into before they speak at school commencements, tour school campuses, or run for public office, he said.

The Independent Telephone Pioneer Association held its annual meeting during the convention, the report of which will be published in next week's issue.

The Pioneers elected the following directors:

H. A. Barnhart of Rochester, Ind.; Mrs. Bertha M. Eaby of Ephrata, Pa. and C. E. McCormick of Johnstown, N. Y.

Other directors are: R. J. Alter of Galesburg, Ill.; D. S. Guild of Honolulu, Hawaii; Geo. A. Hearne of Kansas City, Mo.; K. L. Lawson of Lincoln, Neb.; F. H. MacGougan of Monrovia, Cal. and Berney Simner of St. Louis, Mo.

The Pioneer directors elected the following officers: President, Mr. Simner; Vice President, Mr. Lawson; Vice President, Mr. MacGougan; Executive Secretary & Treasurer, Mrs. Mayme Workman of Springfield, Ill.; and Assistant Secretary-Treasurer, Sophia K. Davis of Springfield, Ill.

### New USITA Directors

**Re-elected**

**L. D. DENSMORE, Lincoln, Neb.**
**C. W. HAAS, Big Timber, Mont.**
**M. M. HALE, Lincoln, Neb.**
**F. G. LaPRADE, Martinsville, Va.**
**R. A. LUMPKIN, Mattoon, Ill.**
**KELLEY McNISH, Bristol, Tenn.**
**P. A. NENZEL, San Francisco, Cal.**
**R. J. SCHAFER, Pinconning, Mich.**

**Elected**

**W. A. KERN, Rochester, N. Y.**
**D. H. HOLDERNESS, Tarboro, N. C.**
**H. C. EBAUGH, Havre, Mont.**
**C. D. EHINGER, Decatur, Ind.**
**ALLAN STACEY, Sunland, Cal.**

### New USITA Officers

**President**
**F. B. McHENRY, Jefferson City, Mo.**

**First Vice President**
**C. C. PEARCE, Riceville, Ia.**

**Second Vice President**
**F. G. LaPRADE, Martinsville, Va.**

**Third Vice President**
**E. C. GATES, Minneapolis, Minn.**

**Executive Vice President**
**CLYDE S. BAILEY, Washington, D. C.**

**Treasurer**
**CARL D. BROREIN, Tampa, Fla.**

**Secretary**
**GEORGE C. RICHERT, Washington, D. C.**

**Assistant Secretary**
**COURTNEY S. SNYDER, Washington, D. C.**

Of interest to Independent companies were two actions of the USITA board of directors.

The board set Oct. 9 to 12 as the dates for the association's 1960 convention. It will be held at the Conrad Hilton Hotel in Chicago.

The directors approved the continuation of USITA's national advertising program for next year, subject to consideration and action by the association's executive committee at its budget meeting later this year.

The USITA Toll Compensation and Settlements Committee report on the agreement it has reached with Bell System representatives, providing for an annual increase of approximately 12 million dollars in message toll compensation for Independent companies, was adopted by the USITA board. (See other pages in this issue for details of the report.)

The board commended the toll committee for its work in this field.

The following directors were reelected by the convention: L. D. Densmore of Lincoln, Neb.; C. W. Haas of Big Timber, Mont.; M. M. Hale of Lincoln, Neb.; F. G. LaPrade of Martinsville, Va.; R. A. Lumpkin of Mattoon, Ill.; Kelley McNish of Bristol, Tenn.; P. A. Nenzel of San Francisco, Cal., and R. J. Schafer of Pinconning, Mich.

New directors elected were: W. S. Kern of Rochester, N. Y.; D. H. Holderness of Tarboro, N. C.; H. C. Ebaugh of Havre, Mont.; C. D. Ehinger of Decatur, Ind., and Allan Stacey of Sunland, Cal.

Other USITA directors are: H. G. Allen of Milton Junction, Wis.; J. B. Atherton of Honolulu, Hawaii; F. S. Barnes of Rock Hill, S. C.; H. A. Barnhart of Rochester, Ind.; E. G. Bellamy of Knoxville, Ia.; H. R. Bollinger of Waconia, Minn.; T. A. Boyd of New York City; C. D. Brorein of Tampa, Fla.; E. H. Danner of San Angelo, Tex.

R. J. Fegan of Junction City, Kan.; E. C. Gates of Minneapolis, Minn.; H. E. Hageman of Lorain, O.; A. L. Hart of Kansas City, Mo.; W. C. Henry of Bellevue, O.; R. F. Lucier of Kansas City, Mo.; F. B. McHenry of Jefferson City, Mo.; H. G. Payne of Export, Pa.; C. C. Pearce of Riceville, Ia.; R. E. Rudolph of Ellensburg, Wash.; K. L. Schroeder of Freeport, Ill.; H. M. Stewart of Cornelia, Ga.; H. W. Vaughan of Fayette, Ala., and W. G. Winters of Houston, Tex.

The USITA directors elected the following officers: President, Mr. McHenry; first vice president, Mr. Pearce; second vice president, Mr. LaPrade; third vice president, Mr. Gates; executive vice president, Clyde S. Bailey of Washington, D. C.; treasurer, Mr. Brorein; secretary, G. C. Richert of Washington, D. C., and assistant secretary, Courtney S. Snyder of Washington, D. C.

To provide a permanent record of the convention proceedings for those who did not get copies of addresses, and for those who did not attend the convention, TELEPHONY, as in the past, is publishing, on succeeding pages, all addresses given at general sessions and conferences of which copies were available.

### USITA Executive Committee

**F. B. McHENRY, Jefferson City, Mo., Chairman.**
**H. A. BARNHART, Rochester, Ind.**
**F. S. BARNES, Rock Hill, S. C.**
**E. H. DANNER, San Angelo, Tex.**
**L. D. DENSMORE, Lincoln, Neb.**
**R. J. FEGAN, Junction City, Kan.**
**MERLE M. HALE, Lincoln, Neb.**
**F. G. LaPRADE, Martinsville, Va.**
**R. A. LUMPKIN, Mattoon, Ill.**
**P. A. NENZEL, San Francisco, Cal.**
**C. C. PEARCE, Riceville, Ia.**

# Independent Telephony's Finest Hour

By HUGH A. BARNHART*

I WOULD be less than frank if I did not say that I genuinely appreciate that very generous reception given me. And I may say the same for the beautifully worded introduction by our executive vice president. He said it with such flowery conviction that I am convinced it must be true. Now if anyone of you think that is an immodest statement, I can only comment by telling you of the famous architect who once was summoned to testify in a court case. During his examination, an attorney asked him: "What is your occupation?" Without blinking an eyelash, the witness said, "I am the finest architect in the world." Later a friend remonstrated with him. "How could you say a thing like that? People will think you are immodest." "I know," said the architect, "but I couldn't help myself. After all, I was under oath."

While such "modesty" may surprise those who do not know me so well, it comes perfectly natural with me! Technically, I am not under oath here this afternoon, but I do swear to tell the truth and nothing but the truth in everything I have to say to you.

First of all, I am genuinely glad to see so many of you here. And it is my pleasant duty in the absence of the mayor and on behalf of the chamber of commerce to say "welcome to Chicago!" Those of you who have been coming to our conventions for years know that there are plenty of places to go and many things to do here. To those of you who may be in this city for the first time, I want to utter a word of warning about the pitfalls. For instance, two evenings ago some telephone friends took me to a rather fancy Japanese restaurant up on the near north side. It was a place of atmosphere and fine food and good fellowship. I was introduced for the first time to a libation called Saki. After three drinks of that Saki I must tell you I felt like crashing my plane onto the deck of an American warship! But the next morning when I woke up I felt like suing for peace! Today I am happy to report my state of health is very good. I trust yours is such that you will be able to withstand my presence on this platform this afternoon.

I hope none of you finds yourself today in the position of a neighbor of mine a few weeks back. He was reported ill and one day I said to his son who was out playing in the yard: "How is your father?" He replied: "Not so good, I guess; the doctor told him not to start any continued stories!"

It is with mixed feelings that I come before you this afternoon to deliver the president's customary "State of the Union" address. At the outset I want to thank you for the honor you bestowed upon me a year ago. I feel it is a real distinction to have served as president of an association like ours. I am sure my predecessors must have felt the same way, and, frankly, it is with some degree of reluctance that day after tomorrow I will relinquish my post to my able successor. But, on the other hand, I don't resent stepping down too much. In fact it's like growing old—something I don't resent—as many are denied that privilege.

It has been a busy year and for me a most pleasant and inspiring one. It has been a year of considerable activity, in which a number of things were accomplished by your association in which we can take considerable satisfaction. It has been, of course, a year with the usual quota of problems, and I might add that many of these problems are still with us. It has been a year marked by some important beginnings which promise to bear fruit in the future.

My talk with you today will, in general, be in the nature of an informal account of my stewardship. I have left to other and better qualified hands detailed reporting on specific events of the past year involving your association's affairs. They are all contained in Mr. Bailey's annual report, printed copies of which are available for distribution at the registration desk. In it you will find that Clyde, with his customary industry and thoroughness, has written an exhaustive and comprehensive summary of events, including legislative developments and other important matters. I commend the document to you for a careful and thorough reading.

It was after studying this accounting of what has transpired in our industry, not only in the past year but during the past several years, and after I had given some thoughtful consideration to the opportunities that lie ahead that I chose as the theme of my discussion: "*Independent Telephony's Finest Hour.*" When we consider our record of achievements, especially during the past 10 or 12 years, when we consider the progress we have made, when we think of the growth we have had, when we consider our present status and our future prospects, and as we leave the Fabulous Fifties in a blaze of glory and start what someone has designated as the Sizzling Sixties, I truly believe we can regard this momentous time in history as our industry's finest hour.

It is with this challenging thought in mind that I would like to talk with you today, chiefly about the prospects for continued growth, progress and prosperity in our branch of the industry. I want to refer only briefly to our record of accomplishments, especially

*Mr. Barnhart is President of the Rochester (Ind.) Telephone Co. and Immediate Past President of the United States Independent Telephone Association.

since the end of World War II, and I would like to invite your attention to the "unbounded horizon," or "the unlimited ceiling," as they say in aviation, which surely will be ours if we use the means now within our hands to see that these promising prospects are achieved. One of the most valuable and important instruments for such success, as I see it, is the continued organized dynamic effort of our national association, the USITA.

Here, I would like to review very briefly just a few of the more important matters that have claimed our attention this past year, some of which will require our continuing efforts in 1960 and perhaps for years after that.

First, there was the battle we all jointly waged—and I would say with good result, everything considered—against the excise tax on communications services. Someone has said that death and taxes may always be with us, but death, at least doesn't get any worse. Telephone excise taxes haven't been getting any worse, but neither have they been getting any better until this year. In 1959, however, we were able to make a slight dent in the armor of the taxeaters and spenders on Capitol Hill.

Although we did not accomplish all that we had hoped to we were partially successful when Congress set a termination date of July 1, 1960, for the tax on local service. And, may I say here parenthetically, that the many thousands of letters which were written to congressmen by you and your subscribers made a very definite impact upon their minds and their tax philosophy. Probably it was too much to expect outright repeal of the tax on local and long distance service in view of the fiscal situation in Washington this year. But Senator Kerr has stated that next year he will make another effort to repeal the tax on long distance as well as local calls. Whether his efforts will succeed and whether the tax on local service will actually go off on July 1, 1960, or whether it will be renewed for another year, depends on many things. It now looks as though we of the industry will have to renew our efforts, under the guidance of our Tax Committee, to get this inquisition levy off the books once and for all. Certainly, we cannot expect to do it if we just stop where we are and quit shouting our protests from the housetops. Let's keep in mind we have won only the first battle.

**Hugh A. Barnhart (left) receives plaque from USITA Director Ralph F. Lucier of Warsaw, Ind., presented on behalf of the association, in recognition and appreciation of Mr. Barnhart's service to the USITA as its president during the past year. The plaque was presented at the closing session of the USITA convention on Oct. 14.**

To win the war we must devote our time from now until the next Congress convenes by flooding our subscribers, who after all are the voters, with information about this inequitable tax which they are paying. Tell them that, during 1959, telephone subscribers of this nation will pay a total of 700 million dollars in telephone excise taxes. Let them know time and again that if this tax were removed it would reduce their monthly telephone bills by 10 per cent. Congressmen listen to the folks from back home. And, then when the day comes that tax reduction is given serious consideration by Congress, the telephone excise tax will be the first to come off.

It is a matter of common knowledge, I think, that had it not been for the persistent and continual efforts of our association our switchboard operator exemption under the Minimum Wage and Hour Law would have been scuttled long ago. I am glad to be able to report to you that legislation which would have diluted and made ineffectual our exemption was not passed by the 86th Congress. However, there is every indication that next year even more vigorous efforts by the powers arrayed against us will be made to increase the minimum wage and to abolish the switchboard operator exemption.

I have said this at every state association convention and I want to repeat it here. If your company should be hurt by this new wage and hour law you had better get ready for it right now—because sooner or later the axe is going to fall. Your best move is to convert to dial at the earliest possible moment. If you are just keeping your head above water then we advise you to look around and merge with neighboring Independents and come up with a financially sound corporation that will show a profit. During the last several

**These four members of the USITA Washington headquarters staff are, left to right: M. H. Alexander, toll engineer; T. R. Warner, radio engineer; G. C. Richert, secretary, and C. S. Snyder, assistant secretary.**

years new sources of financing have been opening up and they will help wou in building a complete modern plant. When you give good service your station growth will start.

I disagree with those predicting that within the coming years our small Independent companies will fade out of existence. We have hundreds of family-owned or locally-owned companies which through sound financing, have modernized, and with from 800 to 1,500 stations, are operating well in the black. They are giving good service and their owners are happy living in their small communities and with good incomes. I want to give encouragement to all small companies to keep working and to modernize. Then you will grow along with the nation's economic expansion which is being felt everywhere.

I am glad to report to this convention that as a result of the good work done by our Toll Compensation and Settlements Committee and its subcommittees an agreement has been reached with the Bell System for an annual increase in toll compensation of approximately 12 million dollars, based on estimated 1959 over-all toll traffic volumes, or about 8 to 9 million dollars additional revenue annually to Independent companies settling on average cents-per-message schedules. This is with the understanding that the industry will proceed with a study of automatic toll ticketing and of the line-haul situation.

Agreement has also been reached on revision in the settlement plans for private line services and for foreign exchange services which are expected to total somewhere between $500,000 and $750,000 annually in increased settlements to the Independents. This is in addition to the increase in settlements for interchanged message toll business.

The total sum going to Independents in 1958 for settlement on interchanged business was approximately 204 million dollars. The total amount accruing to our companies during the coming year will be very substantially increased by the increase in toll messages and the revised schedules which I have mentioned.

It is appropriate to add that the amount which was asked in our negotiation conference with Bell System representatives was considerably more than that which I have indicated. On the other hand, what the Bell representatives first offered was materially less.

With the impact of inflation, of higher taxes, of higher wages, and of higher operating expenses, generally, there is a growing feeling, in which I concur, not only that the share of

**Left to right: Francis X. Welch, TELEPHONY's Washington editor; A. S. Hills of Washington, D. C., president of *Public Utilities Fortnightly*, and D. F. Davison of Spencerport, N. Y.**

Independent companies in the total revenue on interchanged business should equitably be even larger, but also that the time lag in giving practical recognition to increased costs should be materially reduced. The last previous increase in settlement schedules was in 1956, three long years ago.

These circumstances point unavoidably to the need for keeping our association geared up even better than we have so that the time lag may be reduced to an absolute minimum and the manifest inequities inherent in delay may be avoided. Attention is being given to this objective.

These toll compensation problems are complex and vexatious ones. They require not only a vast amount of study and preparation, but a wealth of technical knowledge relative to settlements on interchanged business. Our toll committees and engineering staff have worked long, hard and diligently and deserve the thanks and gratitude not only of the United States Independent Telephone Association, but of all Independent companies. We are indebted also for the assistance and cooperation of the Bell System representatives in joint studies of these problems.

The two groups have been studying costs and conferring for almost a year. From personal observation I can report that they met numerous times to work out differences and to reach a final settlement that would be acceptable to all. In these sessions at the conference table, both sides had their differences, but they finished up with a willingness to get together for the good of the telephone industry. I believe they have done just that. The Bell and the Independent will both benefit as the toll business continues to grow.

Being a newspaper publisher as well as a telephone man, I suppose it is only natural for me to believe in advertising. I have seen its good results for too long a time not to be an enthusiastic advocate of the use of this potent tool, advertising, which incorporates the power of suggestion and psychology of print. If rightly used, I know it can be a great force for good for every telephone company and for the industry as a whole. That is why I have taken a special interest this past year in the activities of our Advertising Committee and its program for 1960. I recently attended a preview of that program. If it is approved by the directors, I predict it will be the most effective and widely read of all preceding campaigns.

Since we spend $200,000 yearly in national advertising, which incidentally is a mere drop in the bucket compared to the similar expenditures by General and Bell, I feel justified in talking to you at some length about it.

It is difficult, of course, in a broad program such as this, always to trace direct benefits down to individual companies. Any institutional advertising program is essentially a seeding operation which takes time and perseverance to cultivate to the point of reaping the expected harvest of good will. But, now that the seed has been planted and the cultivation has been in operation for some time, the cumulative effect is bound to mature as the effort goes on.

Another thing about an advertising program, such as ours, is the preventative nature of good-will generated. There are many Independent telephone companies which now have, or will have, service problems, or other public relations problems, which will bless the day that this advertising program has prepared a more favorable soil of public relations in favor of Independent

telephone company operations. Without it, without any knowledge or awareness of Independent company service performance, they might well encounter hostile attitudes engendered by ignorance.

Viewed in this light, the advertising program becomes a form of insurance which many companies may never need, but which some of the companies—getting into difficulties—will need very much. I believe that our advertising program has brought a sense of prestige for the Independent telephone industry, along with making the public aware of its existence. Such a prestige appeal is bound to elevate employe morale and make life easier for all Independent companies, not only with their own subscribers, but with the regulators, legislators, financial interests, and others with whom they must come in contact.

Finally, it is, I believe, an absolute duty on the part of all business to keep the public informed of what it is doing to justify its existence. Twenty years ago Bruce Barton said: "No major industry has the moral right to allow itself to be unexplained, misunderstood, or distrusted . . . It not only hurts itself but poisons the pond in which we all must fish."

We have substantial proof that our national advertisments have been successful in identifying the Independent telephone industry in the public mind, in providing expansion capital for our companies, in promoting a better atmosphere for more adequate rates of service, in attracting capable personnel, in building good-will and public confidence, and in promoting the American system of free enterprise.

And that brings me to another very important association activity, namely marketing, sales and merchandising.

It is a matter of common knowledge, I think, that the United States has the greatest saturation of telephones of any country on the face of the globe. However, it becomes increasingly evident that the appetite of the American public for more and better telephone service is ever increasing. To make certain that our companies can meet the demand with an adequate supply, and thereby substantially increase their profits, our Telephone Marketing Committee has shown itself to be alert to the opportunities. It has been aggressive in its plan of action to assist our people to take advantage of these opportunities in the field of selling.

The marketing committee's purpose is "profit-boosting through idea-sharing," and its philosophy of marketing and sales is embodied in the slogan, "Effective Marketing Means More Sales, Better Service, Greater Profits," which is being appropriately brought to your attention during this 62nd annual convention. The committee has expressed the hope that those companies which have not yet undertaken adequate marketing and sales programs, including intensive training of employes for this purpose, will take a page out of the book of the Bell System, of General, of United and some of the larger Independents. Their programs have proved definitely and conclusively that very substantially increased revenues of a continuing nature are available to any company which embarks upon an effective merchandising campaign. It is the purpose of our association to lead and show the way in these matters and to act as a clearing house of ideas. By taking up where we leave off, state associations, other association committees and individual companies will be able, we are sure, to implement the activities of our imaginative and enthusiastic Telephone Marketing Committee.

**L. H. Warner (left) of New York City, and T. C. Woods Jr. of Lincoln, Neb.**

In the past, many of our companies have relied heavily on the sales of private lines and extensions. We have depended largely upon "demand contacts"—those made by the customer, not the company—to make our sales. Experience has shown that we can successfully develop among residence customers company-initiated private line service sales. According to marketing and sales experts, there is no reason why we cannot continue to develop added revenue through the use of "scheduled" contacts (those made by the company). In many instances, existing subscribers are unaware of their own needs. Even when they are aware of them, they too often are not fully informed about the facilities and services their telephone company has to offer.

Most of us overlook the fact of what a big advantage we have in selling our new products and services. Our salesmen and women are always given close attention when the subscriber is called over the telephone. Our installers are welcomed inside the home, instead of being stopped at the doorstep, and every member of the family joins in a telephone planning conference with them. No other salesman has such an opportunity. I wonder how many of us are missing out on making an approach. Remember the door is always open for us.

According to some of our companies which have had experience, approximately one-third of the sales contacts handled by their marketing and sales organizations were made at the customers' request. The remaining two-thirds were conducted on a scheduled basis by the marketing and sales organization. A comparison of results shows that the scheduled contact increased average annual revenue 26 per cent, while the demand contacts resulted in an average annual increase of only 13 per cent, or about half as much.

So marketing and sales people now are concentrating on pushing all the equipment and services we have to offer, including primary service, additional telephones, color telephones, portable telephones, paging systems, gongs, extension bells, switchboard and dial telephone systems, answering and recording devices, school-to-home services, directory listings, etc. Our committee on telephone marketing recently issued a list of 34 new products and services which can be sold to your subscribers—all to your own profit.

And, right here, let me remind you that with all these advancements in telephone automation we get farther and farther away from daily contacts

with our subscribers. The good old days of giving information, visiting and listening to the subscribers troubles by our switchboard operators have faded into the past. This makes it imperative that all of us promote active public relations and give it priority next to good service. Every day, week or month we must advertise in the newspapers, use envelope inserts, make personal telephone calls and talk to civic and commercial organizations. Let everyone know of your capital investments, of your improved services, and of your growing subscriber list. Also, if your service is impaired by sleet storms, hurricanes, severed cables and other causes beyond your control, tell the public about it. Then you will have the people and the newspapers on your side when you find it necessary to file for new and higher rates. Public relations grow more important to our business every day. Don't neglect them.

There are many other activities of great benefit to member companies that our association is engaged in and in which it will continue to be engaged through its officers and directors, its fulltime Washington staff of specialists, and its uncompensated committees. They include efforts to increase the exemption under the Securities Act, attempts to obtain radio and microwave frequencies for Independent companies, the conduct of USITA-sponsored engineering and management development schools, and, last but not least, the ever-increasing work load of our Committee on Military Liaison.

An idea of just how important are your association's activities in these matters can be gained from the fact that an investment of more than 2 billion dollars by the communications industry will be involved in the nationwide communication systems for the military and federal civilian defense agencies. More than 200 of these SAGE and other defense program installations are being, or are scheduled to be located, in Independent territory.

Our association is engaged in numerous other activities in the general interest of all our member companies. Suffice it to say that we are progressing and growing, as witnessed by the fact that our membership has increased by 200 companies during the past four years. The heart of USITA is big enough to embrace the interests of all companies, be they large or small, regardless of whether they get their money to operate from banks, lending institutions, manufacturers, insurance companies, or REA. As a matter of fact, 204 REA-financed companies are now members of the association, and nine members of our board of directors are REA borrowers.

**D. O. Hood (left) of Hood River, Ore., and A. W. Lambert of San Francisco, Cal.**

Well, so much for the past and present. Now, what is there to be said for the future?

Well, first of all, I wish to welcome our two new states, Alaska and Hawaii, to our union, and point with pride to the fact that they both are served entirely by Independent companies. Looking ahead I can see that we will work even more closely together as communications demands between old and new states continue to grow.

Personally, I feel that we are in the most interesting and the most promising business in existence today. Although we have made significant strides over the years, I believe along with many others that the brightest era and the largest opportunities lie ahead.

We can, to some degree, predict the future by looking at the past and then drawing certain conclusions. A couple of months ago as president of your association, it was my happy privilege to give what was called "The Commencement Address' to our Management Development School graduates at the University of Kansas. I reminded them that when our mothers and fathers were in high school not one of them had ever heard of bubble gum or bulldozers, of frozen vegetables or Fiber-glas, of bobbysoxers or the United Nations, or formica or the four-minute mile, of foam rubber or food freezers, of jet airplanes or Polaroid cameras, of electric razors or radar, of the atom bomb or drive-in movie theaters, of electric typewriters or color television, of toreador pants for women, for which they can be thankful, or automatic transmissions for the family car or Direct Distance Dialing, and push-button telephones.

**W. G. Wright (left) of New York City, and Leon F. Roberts, USITA director of information.**

These things have meant great changes and we can expect more of them. Now, while I am strictly against sin and in favor of progress, when I see these many changes coming so fast, I feel as though I was born 30 years too soon. I am inclined to sympathize with a certain centenarian who was being interviewed by a newspaper reporter. The reporter said to the old gentleman, "Sir, you must have seen a great many changes during your hundred years." The old man replied, "Yes, and I've been agin all of 'em."

Now, as the American economy is once again pointed toward a decade of unprecedented growth and development on every front, here are some of the developments we can expect to see during the next few years: A single communication system in your home, combining telephone, television and radio; your TV screen will be a flat panel hanging on the wall; there will be radar steering on your automobile; machines will type spoken words directly on paper, and other machines will translate foreign languages as fast as they are spoken. These are only a few of the high-spots because the new products of the 1960's will extend

*(Continued on page 137)*

# Excerpts from Report of

# USITA Executive Vice President

By CLYDE S. BAILEY

ONE HUNDRED and eighty-three years ago the United States of America became an independent nation. One hundred years later, in 1876, Alexander Graham Bell was granted a patent for the first telephone. Upon the expiration of basic Bell patents in the early 1890's, Independent telephone companies, which had already appeared here and there, increased in numbers. Sixty-two years ago, in 1897, the USITA was born when a group of hardy pioneers met in Detroit and founded an organized movement for the protection of their common interests at the national level.

At that time, Grover Cleveland had just surrendered the reins of presidential office and William McKinley had become the nation's chief executive. The population of the country was less than 75 million. The total number of telephones in the country was about 900,000. Today the number is 67 million. The 2,200 Independent telephone companies then in existence were due to increase to 9,200 by 1922, and later through mergers and consolidations they were due to decrease to 3,867 by 1959. The number of Independent telephones has increased year by year until today the total station count for our branch of the industry is well over 10 million. This is more than double the number at the end of World War II.

Without minimizing the great achievements of our big brother, the Bell System, it is well to remember that over the years some noteworthy advances in the communications art have come from the laboratories of Independent manufacturers and from operating companies. The most outstanding example is the dial telephone. Others include the telephone hand-set, Direct Distance Dialing, and mechanized toll ticketing. There are many more. Both branches of the industry are, of course, working for the common goal of providing the best telephone service for the largest number of people at the most reasonable cost.

Another year has passed since we last met in annual convention. More stations have been added. More plant has been constructed. More money has been invested. Communication frontiers are being pushed back farther and farther. Revenues are at an all-time high. Technological advances are going forward. Conversions to dial operation are proceeding rapidly. Within seven years all Independent telephone companies could be dial operated. Eighty per cent of all Independent telephones are already dial.

The revenues of each of 96 Independent telephone companies exceeded one million dollars in 1958, with the largest company grossing more than 92 million dollars. In another year still more companies will graduate into the million dollar class. But the smaller companies will still be important parts of the economic and social life of thousands of towns and communities in which they provide an essential service. Growth of all kinds has taken place also in the Bell System. Seemingly there is no end to the demand of the American people for more and better telephone service.

### *Excise Taxes*

Although repeal of the telephone excise taxes could not be achieved, some definite progress was made when Congress set a termination date of July 1, 1960 on the local service and telegraph taxes. This was done as an amendment to a bill which extended for another year the 52 per cent corporate income tax rate and certain excise taxes due otherwise to expire in 1959. An amendment had been fathered by Senator Kerr (D., Okla.) to set a termination date on both local and long distance taxes, but a conference committee limited the amendment to the taxes on local exchange and telegraph services.

Disappointing though it was that outright immediate repeal of taxes on both local and long distance could not be obtained it was understandable on sound fiscal grounds why Congress did not do more. It was faced with a 12 billion dollar deficit, and repeal of the excises on our business would have increased the deficit by 700 million dollars. Repeal of the tax on local service alone would come to about 325 million dollars.

Senator Kerr has stated he will make an effort next year to obtain repeal of the tax on long distance service also.

### *Operator Exemption*

Some 50 or more bills were introduced at the last session to rewrite the Wage-Hour Act by increasing the minimum wage from $1.00 to $1.25 or $1.50 and repealing or limiting various exemptions. No hearings were held by the House Committee on Education and Labor, but hearings were resumed and completed by a sub-committee of the Senate Committee on Labor and Public Welfare.

Senator John F. Kennedy (D., Mass.) is the principal proponent of changes in the law. His bill, S. 1046, was reported by a Senate sub-committee to the full committee, but the latter was unable to muster a quorum and hence did not report to the Senate.

The bill would dilute the switchboard operator exemption by making it apply only to operators who operate boards in their own homes. Even in this emasculated form the exemption would be available only to companies grossing less than $750,000 a year, the same dollar limitation that would apply to other exemptions. Your associa-

tion has advised Senator Kennedy and the Senate Labor Committee on the objections we entertain to these provisions as well as to the proposed increase in the minimum.

In the case of telephone companies (and other businesses) grossing more than $750,000 a year and presently having the benefit of an exemption, the Kennedy bill would increase the hourly minimum by the following scale:

| | | |
|---|---|---|
| 1st year | $1.00 | 46 hours |
| 2nd year | 1.10 | 44 hours |
| 3rd year | 1.20 | 42 hours |
| 4th year | 1.25 | 40 hours |

According to the best calculation we can make, there are about 2,900 manually operated telephone exchanges with less than 750 stations. It is these exchanges that are eligible to receive the benefit of the present exemption in the law. Figures are not available as to how many of them are so-called agency exchanges, so we have no way of estimating the number affected by the proposal to limit the exemption to operators who operate switchboards in their homes.

But, with respect to the $750,000 annual gross revenue limitation in the Kennedy bill, there are 116 Independent companies grossing more than this amount. Of these, 56 have a total of 467 manually operated exchanges with less than 750 stations each. It is these 56 companies which would be deprived of the operator exemption altogether.

Another year, however, has gone by and no legislation increasing the minimum wage or tampering with exemptions has been enacted.

### *Securities Exemption*

Despite the recommendations of the President's cabinet and the Securities and Exchange Commission and the support of our association, investment groups and the New York stock exchanges, Congress has not yet acted favorably on bills to increase the exemption under the Securities Act. At two different times in the past we have succeeded in getting the Senate to approve an increase to $500,000 from the present $300,000 exemption, but both times the House of Representatives has failed to act.

We shall continue to advocate the desired legislation. At hearings held last summer before a sub-committee of the Senate Banking and Currency Committee and a sub-committee of the House Interstate and Foreign Commerce Committee, our association again presented testimony in support of pending bills. At the hearings we stated that inflationary considerations were justification for increasing the exemption to 1 million dollars.

An increase in the exemption would facilitate and make less expensive the clearance through the SEC of issues of securities of our smaller companies. An increase is long overdue especially in the light of the impact of inflation.

**Left to right: H. G. Allen of Milton Junction, Wis.; W. G. Winters of Houston, Tex.; O. E. Koecher of San Antonio, Tex., and R. C. Reno, editor of TELEPHONY.**

### *Labor Reform Legislation*

Legislation to bring about a correction of many of the labor abuses uncovered by the McClellan Labor Rackets Committee was finally enacted after much maneuvering and jockeying. The Senate earlier in the session had passed the Kennedy-Ervin bill, S. 1555. By Senator Goldwater (R., Ariz.) it was likened to a flea bite on a bull elephant and as something falling far below the minimum expected by the American people.

After hearings by the House Labor Committee, another bill, H. R. 8342, was finally reported, a measure a little stronger than the Senate bill but still weak in many of its provisions. Then Congressman Landrum (D., Ga.) and Congressman Griffin (R., Mich.) jointly introduced H. R. 8400, a bill more realistic in its attempt to deal with labor abuses. The House passed the latter bill. A conference committee then tackled the job of working out a compromise. In the meantime, President Eisenhower made a television appeal to the American people to back satisfactory legislation.

Conference committee meetings resulted in a compromise closer to the Landrum-Griffin bill, and a report by the committee was then accepted by both the Senate and the House. The President signed the bill into law on Sept. 14.

As finally enacted, this labor reform legislation among other things enlarges the jurisdiction of the National Labor Relations Board in certain respects, deals with the subject of hot cargo, comes to grips with secondary boycotts and organizational picketing, carries provisions to protect the rights of the laboring man by introducing democracy in labor unions, and requires union financial reports.

Thus another chapter has been written into the law relating to the labor union movement in the United States. It is another indication of public reaction to evils which seemingly have a way of developing as part of the American economy marches up the road to maturity.

One provision of the Kennedy-Ervin bill as it passed the Senate was of

**Left to right: Ray J. Riordan of Madison, Wis.; W. H. Knoedler of Mosinee, Wis.; and W. F. Miller of Des Moines, Ia.**

direct interest to telephone companies. The provision would have diluted the definition of "supervisor" as used in the Taft-Hartley Act by specifying that service assistants in the telephone industry shall not be considered in that employment category. We are glad to state that when a bill was reported by the House committee it carried no such provision. And, as finally enacted, the labor reform legislation above mentioned left undisturbed the definition of supervisor as it has appeared on the statute books.

### *Penalties for Damage to Facilities*

A bill, H. R. 8138, providing penalties for malicious damage to communication facilities, was introduced on July 8 by Congressman John Dowdy (D., Tex.). It was referred to the House Judiciary Committee for attention. I have advised the committee of our interest and asked to be notified whenever hearings are held. The bill provides:

"That section 1362 of title 18 of the United States Code is amended by adding after the words 'operated or controlled by the United States,' the words 'or used or useful to the military or civilian defense functions of the United States.'"

The United States Code already makes it a criminal offense willfully or maliciously to injure or destroy communication facilities operated or controlled by the United States. But no specific federal protection is given to commercial facilities.

The Department of Defense in a report on the Dowdy bill has expressed the opinion that the disruption by willful or malicious cause of any commercial communication system "could gravely endanger the national existence." The department feels that the enactment of such legislation "would establish a deterrent which would do much to protect the integrity of commercial communication systems utilized by the military."

### *Bills Relating to the REA*

In President Eisenhower's budget message to Congress last January he recommended encouragement of "private lending through flexible interest rates for government credit programs." He stated that, in a number of important cases, present legislation sets "inflexible and uneconomic restriction on interest rates" creating unintended and hidden subsidies and requiring excessive use of federal funds by discouraging private lending.

The last session of Congress witnessed the introduction of a dozen or more bills in both the Senate and House relating to the REA, but none reached the committee hearing stage. Without listing the bills it may be of interest to note that they took various forms including the following:

(1) To require interest rates to be fixed by the Secretary of the Treasury after taking into consideration current average market yields on government obligations plus an amount to cover administrative expenses and probable losses.
(2) To establish the REA as an independent agency of the executive branch of government.
(3) To make the REA administrator independent of the Secretary of Agriculture.
(4) To create a Rural Electrification Administration Revolving Fund in the U. S. Treasury, the purpose of which would be to assist the annual budget estimates of the REA on a net expenditure basis.

Early in the session a bill was passed by both branches of Congress to divest the Secretary of Agriculture of jurisdiction to review loans over $500,000. The President vetoed this measure and his veto was sustained by congressional vote. Hence the secretary continues to exercise his former power.

More than a year ago our board of directors created an REA Borrowers Committee within the USITA framework to give special attention to the problems of such borrowers. (See REA Borrowers Committee's report on another page of this issue.)

The REA, on Aug. 1, had a total of 673 telephone borrowers, of which 210 were cooperatives and 463 commercial companies. It has lent a total of $585,212,415, of which $229,791,232 was to cooperatives and $355,421,183 to commercial companies. Of the 665 borrowers, 204 are members of the USITA.

**Left to right: H. A. Barnhart of Rochester, Ind.; P. M. Ferguson Jr. of Mankato, Minn.; J. B. Haley of Austin, Tex.; L. W. Hill of Tarboro, N. C.; W. G. Wright of New York City; H. D. Fargo Jr., president of TELEPHONY, and Dan Fargo, TELEPHONY's managing editor.**

### *What Goes On at FCC*

*The Menomonee Falls Case.* Everyone is familiar with the Menomonee Falls property acquisition case, Docket 12308, in which the Wisconsin Bell Telephone Co. sought permission under section 221(a) of the Communications Act to acquire certain Independent property in the Badger State. Our association intervened in the proceeding and opposed the acquisition. A final decision of the federal regulatory body (Federal Communications Commission) on July 6 rejected the several contentions advanced by the association and permitted the purchase.

Consideration was given by our board of directors to the question whether an appeal should be taken to the courts from the commission's finding. Expert legal advice was offered that the commission's action was open to attack because of its unwarrantedly restrictive interpretation of the "public interest" standard set up by Congress in the Section 221(a) merger provisions of the Communications Act.

In the light of all the circumstances involved it was decided not to prosecute an appeal. If the tide of subsequent Bell acquisition events should seem to make it proper, consideration can be given to the desirability of taking our problems to such other forums as may be deemed appropriate.

*Revised FCC Procedure in Merger Cases.* In 1957, Congress amended the Communications Act to make hearings in merger cases mandatory whenever requested by a telephone company, an association of telephone companies, or state or local governmental authority.

In July, 1958 the FCC by a Notice of Proposed Rule Making suggested that a request for a hearing should be made within 40 days from the date on which posting of a notice of a merger intention was made, instead of 30 days as before. The commission also suggested that when a hearing request is made, it be accompanied by a statement of reasons why the merger would not be in the public interest.

Taking advantage of a public invi-

tation to submit comments, our association—

(1) Requested that 60 days be allowed for filing a request for a hearing.

(2) Raised question as to the validity of any requirement that a hearing request be accompanied by a statement of reasons, since such a requirement was not authorized by Congress in the 1957 amendment to the law.

(3) Requested that applicants submitting petitions seeking merger authority furnish copies to the USITA and the state telephone association involved.

In a report and order in Docket No. 12496, dated Feb. 11, 1959, the commission sustained our association's objection to a requirement that when request for a hearing is made, it be accompanied by a statement of reasons. This was the most important part of the comments submitted to the commission. On the other points the commission rejected the association's requests.

The revised rule (1) permits any member of the public desiring to oppose or support a property acquisition application to write the commission 40 days from the date of the posting of a notice by the carrier; and (2) requires that requests for public hearing be submitted within 40 days from such posting.

*Lease Maintenance Case.* The lease maintenance case, Docket 11972, involved tariff filings of the AT&T offering to provide on a common carrier basis mobile radio systems on a lease-maintenance plan to private users. When the tariffs were filed more than two years ago, the USITA intervened in support of a contention that the service contemplated should be held to be a common carrier one.

In February of this year, AT&T notified the commission that, effective Jan. 24, 1961, it was withdrawing from the business of offering this kind of service on the basis of the telephone company providing and maintaining radio equipment for use on frequencies licensed to the customer. It stated, however, that it hoped in the future to provide common carrier private line mobile radio services on common carrier frequencies licensed to telephone companies where there is a public demand. No such offering can be made at present because of the lack of necessary common carrier frequencies.

The commission soon after the notification terminated the proceeding in question.

*General Microwave Case.* In August of this year decision of the FCC was rendered in the general microwave case, Docket 11866, in which our association, at hearings two years ago, presented five witnesses who outlined the frequency needs of Independent companies above 890 Mc. The Bell System also presented witnesses who testified on the same general theme.

**Left to right: Mr. and Mrs. C. F. Veach of Columbus, Neb.; Raymond H. Reed, also of Columbus; John H. McHenry of Jefferson City, Mo.; Mr. and Mrs. Norwood Teal and Mr. and Mrs. John Manning, all of Keosauqua, Ia.**

We regret to report that in this decision the FCC gave expression to a viewpoint that was adverse to the position taken by telephone industry witnesses. The commission gave a green light to private radio services to develop their own point-to-point microwave radio systems. The written opinion stated that there were adequate frequencies above 890 Mc for both private and common carrier use. It also stated: "There is no basis for generally concluding that the licensing of private communications systems would adversely affect, to any substantial degree, the ability of common carriers to provide service to the general public or adversely affect the users of such common carrier service."

The Commission also used the following debatable language:

"It is abundantly clear that there is no express obligation on the part of the commission under the Communications Act of 1934, as amended, to protect the users of common carrier service from any adverse economic effects that the carriers might suffer in that connection."

As asked in one of our member letter items, reporting upon the commission's decision, could it be that there are forces seeking to atomize the nation's common carrier communications systems and introduce a conglomeration of separate, overlapping systems?

In the same decision, the commission discussed the problem of interconnection between private and common carrier systems, in such a way as to imply sympathy for the idea of interconnection. It has been the position of the industry that mandatory physical connections should be in order only between two communication common carriers, except in very special cases.

The position the commission's decision leaves the public in is simply this: Customers will now have a choice between installing their own point-to-point communication systems or having them provided by common carriers. The circumstances strongly point to the desirability of telephone companies preparing NOW to meet any such needs, or face the alternative of allowing so-called specialized common carriers to enter the field, furnish their own microwave facilities, and thus get their foot inside the common carrier door.

Because of the importance of the two problems raised by the commission's decision—a green light to private communications systems to come into being, and sympathy for interconnection—our association on Sept. 8 filed an application for reconsideration of these issues. The AT&T, General Telephone Service Corp., and Western Union filed similar petitions.

*Frequencies Between 25 and 890 Mc.* Another radio proceeding in which the USITA presented witnesses in the interest of seeking to stake out a claim in the radio spectrum for frequencies for common carrier usage was Docket 11997 involving frequencies between 25 and 890 Mc. This portion of the spectrum contains all the frequencies presently being used for mobile communication, television, and FM broadcasting.

In March, written testimony was submitted on behalf of the Independent industry by Donald C. Power, Chairman Ross Herrick of our Engineering Sub-committee on Radio and Carrier, and USITA Radio Engineer Tom Warner. Later, Mr. Herrick and Mr. Warner gave a summary of their testimony at open hearings. A decision in this proceeding is now awaited.

*Interstate Rate Reductions.* It came

as a substantial surprise when, on July 24, the Federal Communications Commission announced a 50 million dollar interstate rate reduction, following conferences with Bell System representatives. The reductions were first said to be for distances beyond 300 miles, but were later revised to be applicable beyond 675 miles, doubtless for the purpose of avoiding state commission criticism of widening disparities between intrastate and interstate toll rates. The longer distances were specified in a public announcement dated July 31, which also stated that the reductions, to be effective in mid-September, would amount to 47 million dollars, with 3 million dollars in further reductions to be worked out later.

It was commonly reported that if a reduction had not been acquiesced in, a show cause order would have been issued.

The negotiations which led to the reductions were secret. At no point were Independent telephone companies given a look-in. Our branch of the industry was ignored.

As soon as the commission's announcement was issued I made oral protest against the failure to take the Independent industry into the equation. I also addressed a letter to the commission drawing attention to the interests of Independent companies and stating that, although our companies are participating carriers, they had been given no opportunity to present their views. I called attention to the fact that when interstate reductions were negotiated in 1941, and again in 1943, the commission had specified in public statements that the earnings position of the Independents was to be unimpaired; and I asked that the principle or policy then recognized be given expression in the present instance.

The commission, on Sept. 2, replied to my communication stating that in its opinion the effect of the interstate reductions on the Independent industry as a whole would be negligible because the reduced rates will apply only on calls between points at the longer distances. The commission stated, however, that if any Independent company believes its share of the new joint rates is unreasonably low it can enter into negotiations with the Bell System under existing procedures looking toward a revised division. The commission also stated that if the company is unsuccessful it can invoke the regulatory body's jurisdiction under Section 201(a) of the Communications Act.

It is undoubtedly correct to say that the major part of the toll business of Independent companies involves shorter distances than those for which the new interstate rates apply. On the other hand, as we stated to the commission in our letter:

"It is clearly evident that changes in the rate structure which reduce the revenue per message on the interchanged traffic will produce less compensation to the Independent companies with average cents-per-message settlement arrangements than they presently receive. Of the 3,220 companies interchanging toll traffic directly with the Bell System companies, only 46 are currently settling on a special study basis. Moreover, as a result of the settlement method, the bulk of the traffic of these latter companies is also subject to reduced compensation under the proposal. It seems hardly necessary to point out, in addition, that any changes in compensation per message apply to total interchanged traffic rather than to interstate traffic alone."

After announcement of the interstate reductions was made, I also addressed a protest to the AT&T, in which I stated that, in view of the surrounding circumstances, Independent telephone companies feel that the Bell System should make necessary arrangements to protect the earnings of the Independents from the impact of the reductions.

In the intervening weeks, our Toll Compensation Committee has been in negotiation with Bell System representatives on needed upward revision in toll settlement schedules on interchanged business. Another chapter of this report, as well as the report of that committee, will discuss these negotiations. Some necessary revisions of advantage to Independent companies settling on average schedules may result. However, no specific or earmarked sum has been included to offset losses expected to accrue to us from the interstate reductions negotiated by the FCC.

*Physical Connection Case.* A case involving the physical connection problem was instituted by the FCC on July 14. It is Docket No. 12940, *In the Matter of American Telephone & Telegraph Co. Regulations Relating to Connections of Telephone Company Facilities with Certain Facilities of Customers.*

Under tariffs filed by the AT&T and the Northwestern Bell Telephone Co., power and pipeline companies would be permitted to interconnect their telephone facilities with the exchange and message toll facilities of the AT&T, so as to form a through circuit only under specified emergency conditions and in cases involving hazardous or inaccessible locations. The formal investigation was instituted by the FCC to determine the reasonableness of the tariffs and whether they create unlawful discrimination.

Independent telephone companies, especially those subject to the full jurisdiction of the federal commission, have an interest in any principles which may evolve from the proceeding.

Generally speaking, telephone companies should, themselves, determine, certainly in the first instance, with whose facilities their own should connect, and regulatory commissions should interfere with this discretion just as little as possible. To hold otherwise would produce a divided responsibility in providing a satisfactory grade of communication service.

In the docket in question, the USITA has filed a petition of intervention in order to be in a position to argue for an ultimate decision that will be in the public interest as we see it.

**Left to right: R. A. Mathews, A. Burkett, and G. F. Doherty Jr. all of New York City, and P. R. Parsons of Rhinelander, Wis.**

### *Other Association Activities*

Our association and its member companies have been the beneficiaries of much uncompensated work by our 22 general committees and 14 regional small company committees. It is to the smaller operating units in our branch of the industry that the activities of our committees are in the main di-

*(Continued on page 139)*

# Take a Giant Step

By DAVID A. HAMIL*

*(An REA Conference Address)*

A LONG time ago, when we were very young, some of us played games in the school yard or on the corner lot, or down by the barn. In one game—the name has long since escaped me—the children took various kinds of steps and strides assigned to them. There is a phrase that clings to the memory for some of us: "Now take a giant step."

We stopped playing games many years ago, but it seems to me that in the more serious responsibilities we undertake as we build our lives there are times when things we learned as children still apply. At some point in the last 10 years—this decade of REA's telephone program—each of you said to yourself, "Now take a giant step."

### *Changes In Doing Business*

The giant step meant assuming indebtedness for a half-million dollars—much more in many cases. It meant for many of you a turning away from magneto service which had been familiar for so many years to intricate dial. For some it involved expensive engineering, a tremendous construction project, a new accounting system, hiring specialized personnel, revised tariffs, and scores of other changes that mark transition from a small enterprise to a big one. It is a giant step to double and triple the number of subscribers and your investment. And it is a giant step to tie together farm and market town with modern telephone service in an area-wide system.

For REA, too, the 10 years of rural telephone loans program that will be observed Oct. 28 by ceremonies in Washington represent a giant step. In the closing months of 1949, there was only the amendment to the Rural Electrification Act and the beginnings of a staff for administering the new telephone loans program.

Many people in the telephone industry were wary of an agency of the federal government becoming involved in any fashion with our very Independent private telephone enterprises. A few were downright hostile. That was 10 years ago. You and I have come a far piece, haven't we, as we talk together here today? Mutual confidence that all segments of the telephone industry could work together to get adequate service to the rural areas—mutual confidence that government could provide you with a service and not interfere unnecessarily in your business operations—this has indeed been a giant step.

### *Rural Areas Expect More*

The people you serve have been making some strides, too. Some of you remember the farmer who paid 75 cents a month for his crank-type telephone. Well, you know he is willing now to pay adequate rates. And, you know also that he has come to expect modern dial station equipment as standard. He is not content now to wait his turn to talk to the neighbor down the road. The good service you have permitted him to sample has become his standard fare, and he expects to dial a city 500 miles away and get instantaneous connection and perfect reception for market information or a chat with relatives. Yes—subscribers, too, have taken a giant step.

Not all of them, of course. About 40 per cent of our farms have no service at all, and about a third of the remainder have service that is inadequate by modern standards of the industry. The greatest gap, though, is not farms alone, but in non-farm rural homes, thousands of crossroads communities and very small towns, and a host of rural industries that are somehow limping along with overcrowded lines, with manual switchboards manned 12 or 18 hours a day, and with special toll charges to talk to business people in the nearby town.

Much of this is found in small pockets which nearby systems seem unable or unwilling to serve with modern dial. Part of the trouble is in the very smallness of some existing telephone organizations. They are too small to find adequate capitalization, and they are too small to hire the experienced personnel needed to operate a modern business efficiently.

### *What Is "Too Small"?*

You ask how small is "too small?" We can't tell you. The border line between a feasible system and one that is not is difficult to fix. Whether a telephone organization can justify enough long-term investment to rehabilitate and continue its existence does not depend solely on its number of subscribers.

You are telephone industry men, and you know this situation well. You have demonstrated to REA that the really critical ingredients to success are the potential subscribers, the economic future of the area, and, most important of all, sound business management.

### *Importance of Potential*

I want for a moment to enlarge on each of these three factors. When you came to REA with an application for a loan, we were not so much interested in how many subscribers you had as we were in what potential there

*Mr. Hamil is Administrator of Rural Electrification Administration, Washington, D. C.

would be in territory you intended to serve. And we were not so much interested in what your revenues had been as whether adequate rates for the new service would yield sufficient revenue to pay off the REA loans and leave enough margin to make the enterprise secure.

Closely tied to the number of potential subscribers is the economic capacity of the area. A few parts of the country are slowing down economically for a variety of reasons. This is, for the most part, a local phenomenon, and the Rural Development Program which the U. S. Department of Agriculture is carrying on with local agencies in depressed counties is designed to overcome some of the local handicaps. In most of the country, the population is increasing. Business is prospering, people have more money, and there is more demand for first class telephone service.

### *What We Have Learned*

In the last 10 years, all of us—even men who have been in telephony all their lives—learned something about the service they offered. That discovery was part of the giant step: That rural people were not much interested in cheap inadequate service. In other respects, people in the country were getting accustomed to living like their city cousins. They were acquiring the best machinery and tested scientific methods to do their farm chores. Electricity helped change the whole way of life on the farm and in the rural community, with radio and TV, all-electric kitchens and air-conditioning. Good cars and paved highways provided quick transportation. The handcrank, whoop-and-holler telephone box is, today, an anachronism, no matter how sentimental we want to be about its place in the history of the industry.

Today you are marketing a product that people want—modern dial telephone service, with private lines and graded service. Even your multi-party rural service is limited to eight parties, with full-selective ringing. The farmer can have service around the clock. He knows he can depend on it. This is a giant stride forward.

Your sales program is showing the farmer new ways to get full use of his telephone—with savings to him in time and money he used to spend in trips to town. Extensions on the farm at small extra cost permit him to keep his whole farming business running with factory efficiency without sacrificing the benefits of country living.

Higher rates for a better service, good saturation of stations per mile of line, and increasing population—these are things that count in establishing feasibility.

**Left to right: D. H. Bowden of Almond, Wis.; Reuben Schmidt of Wittenberg, Wis.; A. H. Bowden of Almond; R. G. Peterson of Wittenberg; J. A. Cooper and James Engleman, both of Rhinelander, Wis., and J. K. Avent of Tarboro, N. C.**

### *Quality of Management*

You and I understand how important the quality of management is in carrying forward the rural telephone program. I have to run my ranch efficiently, or I wouldn't be in the cattle feeding business long. You are here at this meeting today because you know how to turn out a better kind of telephone service more efficiently than someone else. In some respects, telephony has become more competitive. There is interest now in what can be done with worn-out systems in isolated areas. There is someone watching and waiting to buy up the telephone facilities and service area rights from anyone not able or willing to do the best possible job. This is evident in the changing statistics on the Independent telephone industry. We are down to about 3,630 Independent companies today, but many of these are stronger than ever before. The great stride forward being taken by the Independent industry is dropping mediocre management by the wayside.

We are glad to see your systems expand, because your larger resources permit you to pick up and spread the costs of service in thin rural areas more easily. We are depending upon creative engineering and imaginative management to find more economies in construction and operation so that unserved pockets may be reached.

### *Working Together*

Small companies and cooperatives, as well as the larger ones, can pick up responsibility for better area coverage by working more closely together, where geography and other considerations make this practical. I think there should be more examination of advantages to be gained from joint contracts and pooling arrangements for such services as maintenance, purchase of materials and supplies, advertising, legal counsel, and perhaps billing and collecting. Several small organizations together can hire high-quality specialty services that are generally available only to the larger concerns. If more of this could be done on a volunteer basis, it might be another giant step in operating economies that would permit still broader rural telephone service.

With each passing year, we find it more feasible to carry telephone service to those overlooked households and rural industries out on the fringes and in the isolated pockets. The products of modern engineering and new development in the science of communications bring these people into the market. Microwave, subscriber carrier, buried plant, longer spans—these are giant steps that make your job of rural area coverage possible.

Those of you who already have experience with the REA rural telephone program know the extent to which this agency will go in order to help you put modern equipment and dependable service out there where the need is greatest. Our REA engineers have had good cooperation in working with equipment manufacturers and material suppliers on new developments. Working with all segments of the telephone industry, we have helped build a reservoir of engineers. Our field people will continue to devote their abilities and experience in helping you find ways of putting together feasible loan proposals. I think relationships between small Independents and their connecting companies are good and still improving.

As REA marks the 10th anniversary of its rural telephone program on Oct. 28, I think we can take both satisfaction and hope in the giant strides taken, hand in hand, toward adequate rural service.

# How Large Companies Can Finance Through REA

By ELNATHAN GATES*

*(An REA Conference Address)*

BILL WINTERS, the hard working chairman of our (USITA) REA Borrowers Committee, delegated me to address this meeting on the subject of his own choosing: "How Large Companies Can Finance and Develop Their Rural Exchanges Through an REA Loan."

This is further evidence that they think and talk big in Texas and there are no small companies in Texas; however, statistics prove that Texas has 60 REA borrowers with $36,818,000 advanced through July 31, 1959.

The subject matter of my remarks is based upon our experience and pertains to all companies, large or small, corporations, cooperatives, partnerships or individually operated companies that qualify under the telephone amendment to the REA Act.

It is our opinion that the vast majority of Independent companies in the middle western and southern states of the United States do serve sufficient rural communities, including switching companies, to establish a separate REA loaning company that would prove economically feasible.

It is also our opinion that many of the rural communities served by Independent companies, as well as the Bell companies, are now operating in the red on an individual exchange basis. The establishment of a separate associated company would eliminate this operating loss.

One of the first qualifications to be eligible for an REA telephone loan is that the funds must be expended for the improvement of telephone service and the expansion of service in the rural areas.

The term "rural area" shall be deemed to mean any area of the United States not included within the boundaries of any incorporated or unincorporated city, village or borough having a population in excess of 1,500 inhabitants.

However, the act further provides that: "When it is determined by the administrator to be necessary in order to furnish or improve telephone service in rural areas, such loans may be made for the improvement, expansion, construction, acquisition and operation of telephone lines, facilities or systems without regard to their geographical location." This provision permits the administrator to make loans for telephone facilities that are located within cities, villages or boroughs of more than 1,500 inhabitants, if such facilities are necessary to the provision of adequate telephone service outside the boundaries of such places.

The present administration will approve loans on the following two bases: If the area coverage survey indicates there are more rural than urban subscribers, or if the expansion, rehabilitation and construction costs are more for the rural subscribers than for the urban subscriber as established by the area coverage design.

Our REA loan companies, serving 80 exchanges in Minnesota, Iowa, Illinois and North Dakota have, in the interest of improved communications service between urban and rural subscribers, adopted the following REA policy pertaining to switcher lines:

"The provision of economical and efficient telephone service indicates the desirability of having a single system serve both the urban and rural portions of a single community of interest to the maximum possible extent, thereby eliminating the need for switcher lines around the major towns and community centers.

"The acceptance of the privilege of serving the more profitable areas carries with it the responsibility for also serving the less profitable rural areas within the same community of interest. In those cases, where existing companies now serve the surrounding rural areas, or they should be willing to transfer the entire responsibility to an operator that is willing to carry out the over-all responsibility thereby eliminating the divided service responsibility."

We have found that most switcher line companies want to get out of the telephone business rather than improve their plants to meet the requirements of modern dial exchanges.

I will attempt to give you a proven example of how any company can take advantage of an REA loan to convert, expand and rehabilitate exchanges serving rural areas.

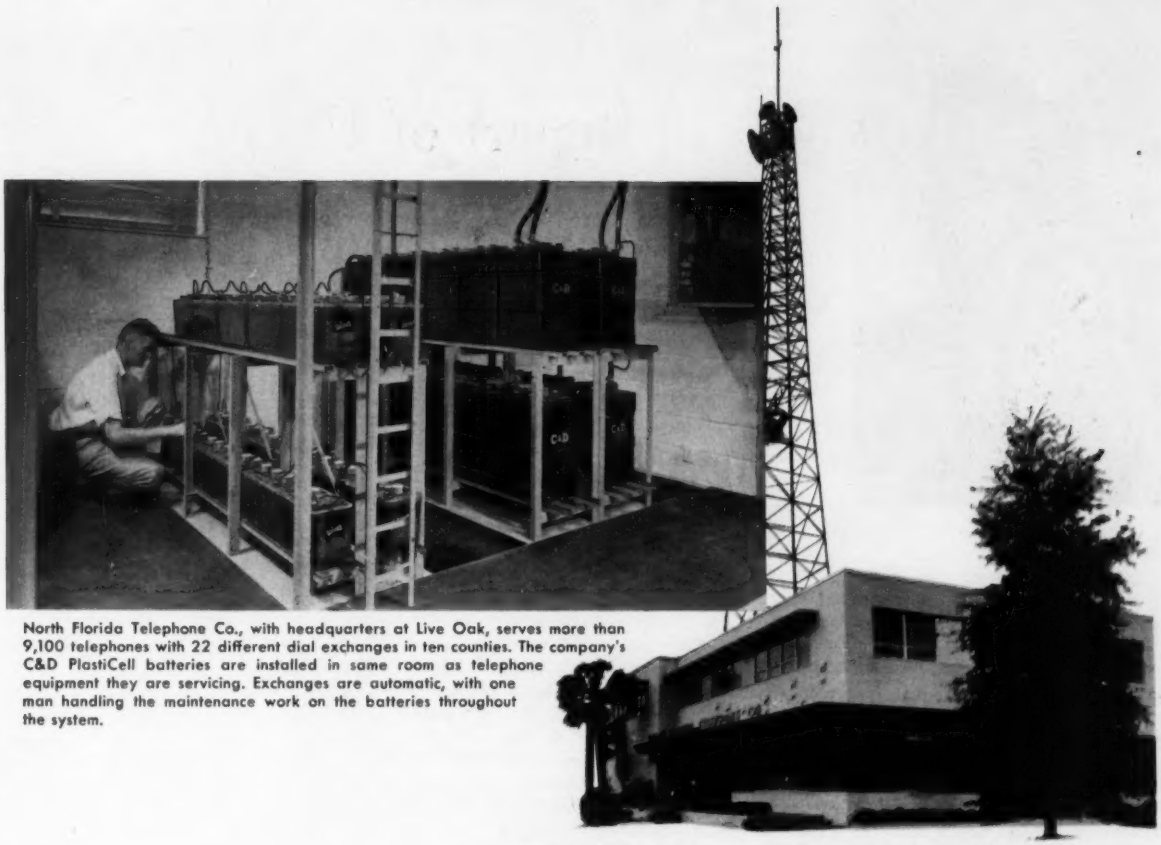
The Minnesota Telephone Co., a Delaware corporation and financed by private capital with 4½ per cent bonds, was faced with a demand for dial service in two county seat communities, each with a population in excess of 1,500, and two other small exchanges.

This company did not own or operate a single rural telephone beyond the city limits of the sample county seat exchanges. The rural area of these communities was made up of a very large trade territory, with large farms averaging one subscriber per mile.

The switcher companies, serving the rural areas, were not large enough to qualify for an REA loan and our privately financed company was not anxious to make the $500 per station investment to take over and construct a new modern rural system, using its source of private financing. Even though the private financing was available, we did not feel the project

*(Continued on page 145)*

*Mr. Gates is President of Minnesota Telephone Co. of Minneapolis, Minn.



North Florida Telephone Co., with headquarters at Live Oak, serves more than 9,100 telephones with 22 different dial exchanges in ten counties. The company's C&D PlastiCell batteries are installed in same room as telephone equipment they are servicing. Exchanges are automatic, with one man handling the maintenance work on the batteries throughout the system.

## . dependability, low maintenance, economy, favor battery power by C&D

***DEPENDABILITY*** is the most important factor to consider in battery purchases for telephone exchanges. This is the opinion of North Florida Telephone Co., in Live Oak, Florida. It is the major reason why C&D batteries are installed in many of North Florida's twenty-two exchanges.

***LOW MAINTENANCE*** figures in, too. North Florida includes maintenance costs in arriving at "real" battery power costs. By reducing battery maintenance costs to an average of 2 hours per month per battery including travel time, the company has every expectation of netting substantial over-all economies using C&D PlastiCell* batteries.

There are good reasons for this C&D performance. PlastiCell batteries have full .266″ thick plates—not just the usual .156″ or .220″. In addition, you get triple insulation—not just dual—to keep active materials from shedding off the plates.

PlastiCell lead-antimony grid batteries are built for 14-year life in full-float service. Add the advantages of suspended and supported plate construction, *Hi-Impac* covers, transparent shockproof containers . . . and the many other C&D plus-features, it's easy to see why most telephone men agree:

***"C&D is your better battery buy."***

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New Bulletin T-533 describes 14-year life PlastiCell (lead-antimony) batteries. T-532 covers 25-year life PlastiCal (lead-calcium) batteries. Send for your copies today!

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# Report of USITA Accounting Committee

By W. H. TODD, *Chairman*

IT IS A pleasure for your Accounting Committee to submit its report for the past fiscal year. The activity of your committee during the past 12 months has primarily involved proposals of rule-making by the Federal Communication Commission and the Internal Revenue Service. A large number of the Independent telephone companies are exempted from FCC regulations by the Communications Act of 1934 as amended, but they will be concerned nevertheless with a systems of accounts prescribed by state regulatory commissions. The majority of such systems of accounts ordinarily originate from rules laid down by the FCC, so it naturally follows that any change in the Federal Communications Commission system will eventually find a place in the systems of accounts by which state regulatory bodies govern the affairs of the telephone companies subject to their jurisdiction.

With this thought in mind your Accounting Committee carefully studies each proposal with a view toward reducing the accounting burden to which member companies might be subjected. We also give consideration to the problem of management and the effect such changes might have on the interests which it serves. The committee realizes that some of the problems presented are occasionally of a controversial nature, but we are happy to report that on the items dealt with during the past year we have found the committee in substantial agreement.

One of the first items considered by the Accounting Committee was the proposed rule-making adopted by the FCC in Docket 12639 and relating to the microfilming and preservation of records. The recommendation of the committee was favorable to microfilming records, but that the practice be on a voluntary basis and not mandatory under conditions which cannot be substantiated from an economic practice. The commission issued its First Report and Order in this docket on Dec. 19, 1958. It will be noted that favorable action was received on parts of the proposal and we entertain the hope that the commission will be able to see its way clear to further relax requirements at a future date.

The next matter for consideration was a proposed rule-making by the Internal Revenue Service on a proposal which would result in a change in certain cases from retirement to straight line method of computing depreciation for income tax purposes for taxable years, beginning after Dec. 31, 1953. The committee reviewed the results of the proposal and it was determined that telephone companies were not involved and no comments were filed. This opinion was concurred in by the AT&T company.

The committee considered notice of proposed rule-making in Docket 12760 adopted by the FCC in the matter of amendment of Part 31 of the commission's rules and regulations to delete Telephone Plant Account 207, Right-of-Way. It was unanimously recommended that we concur in the elimination of account 207 and the amount included in the appropriate plant accounts for which the right-of-way is associated. Another consideration involving plant accounts was covered by FCC Docket 12811 to amend Part 31 of its Rules and Regulations to include in Account 234, instead of Accounts 231 and 232, the investment in certain SAGE equipment. The committee expressed its approval of this proposal as we believe it is to the best interest of each company involved to be able to identify certain specialized items of plant used in specific locations.

The more recent items reviewed by the committee are covered by FCC Docket No. 13149, in the matter of an amendment of Annual Report Form M for Class A and Class B Telephone Companies, to review the schedules showing information regarding the investment of pension and benefit funds, FCC Docket No. 13180, in the matter of amendment of Part 45. Preservation of Records of Telephone Carriers, of the commission's Rules and Regulations to reduce the retention periods for payroll, employe service, mortality and related records; and FCC Docket No. 13181, in the matter of Amendment of Annual Report Form M for Class A and Class B Telephone Companies, to change the reporting requirements for compensation paid to individual employes. The committee considered the proposed rule making in connection with three dockets set forth above and has filed a recommendation of agreement in connection with Docket No. 13180 and Docket No. 13181. The committee also filed a recommendation in connection with Docket No. 13149, expressing agreement and in addition suggesting a provision for filing the required report by a group company and the proper reference by the operating companies.

This brings us up to date on the current activities of our committee and now I would like to take a moment and discuss some accounting changes which have been finalized this year.

In 1953, the chairman of your Accounting Committee, along with representatives from the AT&T company, met with members of the Federal Communication Commission and a sub-

*(Continued on page 146)*

# Budget Responsibilities of All Management Levels

By WALTER G. WRIGHT*

*(An Accounting Conference Address)*

THE SUBJECT of this presentation may appear to be outside the field of interest of the smaller companies represented here today due to the limited number of management levels and departments which exist in many of such companies. Admittedly, the departments, geographical divisions, functions and job titles referred to in this text have in mind companies of the size of General System companies. Nonetheless, at least some of the underlying thinking involved can be applied to even the smallest companies when considering the principles we are discussing—that of relating the responsibility for budget preparation to the same individuals as are to be held responsible for the results under that budget.

Despite the wide range in the number of management levels which exist within the ranks of member companies of the USITA, most of you carry out certain budget responsibilities—even if only to a limited extent. This is true whether your company operates, accounting-wise, on the basis of a simplified daily ledger and the cash box, or whether your company has thousands of employes with complex accounting practices involving machine accounting and, in some instances, giant electronic computers.

It is also recognized that the budget responsibilities to which I refer may vary according to the size of the company and also to the extent to which efforts have been made to delegate, by a geographical area, the responsibility for making a profit within that geographical area over which a particular individual has supervision. In other words, we are discussing a means of getting across to as many of our line-supervisory people as is feasible, not only "cost consciousness" but also an appreciation and understanding of what in some circles has been referred to as "Profit Management."

Much of the budget philosophy behind the principles expounded herein, therefore, can still be applied even though many of the functions referred to may be combined under a single individual. This is possible even in the smaller companies, if it is borne in mind that all we are attempting to accomplish is the use of the budget procedure as a tool and a method of planning for a profit. However, before getting into the detail of what is to be suggested, I want to touch upon the importance of having a budget procedure of some sort.

Budgeting means many things to many people, running the whole gamut from the federal government budget of 80 odd billion dollars to the family budget of the wage earner. As we all know, the size of a budget does not in itself determine the ability to live within it, or to make a profit. We have seen within recent years the federal budget operate with a deficit and most of us have seen the day when, in our family budgets, we have had to defer certain expenditures for a new car, etc., to meet the costs of food and shelter in order to say within our current income.

Among regulated public utilities, and the telephone business in particular, most companies which have been successful (by this, I mean providing a satisfactory service to the customer at a profit to the investor); have operated under some kind of a budget procedure. Furthermore, generally speaking, the better the planning and budgeting the more successful the company.

It is a common misconception in many circles in our business, that a budget is merely a short-term estimate of operating results set up in a manner so that subsequent comparisons with actual results will probably show an overrun in revenues and an underrun in expenses and construction expenditures. This is based on the fallacy that subsequent budget comparisons which result in such a situation reflect a good management job, and that no explanations will be required for deviations from the budget, as long as they are in the direction of improved net income and/or reduced construction requirements. From the point of view of new money requirements alone, this may suffice, but when considering the budget from its broader aspects as a tool of management for effective planning, improved earnings and increased operating efficiencies, it falls far short of the mark.

The above may be an over-simplification, but it points up the inadequacies of a too commonly accepted principle of budgeting when forecasting is done principally on the basis of a straight projection of recent actual results with little or no programming of improvements in performance. Indeed, it seems obvious that submission to trends is more in the nature of projecting our fate than planning our future.

Let us consider maintenance expense for a moment; it has been the usual practice to make periodic comparisons between budgeted and actual costs and assume that the results of such comparisons indicated the extent to which the budget was adhered to. The fallacy here is obvious; such an approach assumes that if the authorized dollars are spent, the objectives of the budget have been attained. To illustrate the weakness of such an assumption let us assume a budget authorization was made

*(Continued on page 38)*

*Mr. Wright is Vice President-Operations of General Telephone Service Corp., New York City.

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MODEL
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# *answering service

## provides a complete phone answering service for your subscribers and brings you a steady flow of revenue!

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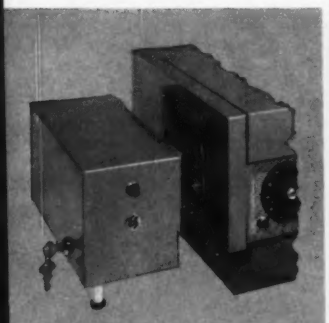
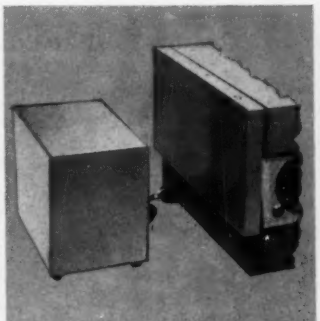
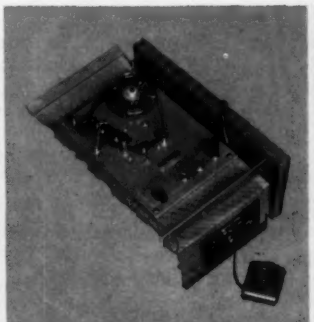


**Remote Call-Back** addition for Model DCR-1. Subscriber hears recorded messages by transmitting a tone signal over remote phone. The Electronic Secretary then switches to normal operation.



**Voice Control Attachment** for Model DCR-1. Permits caller to record message for extended period of time. Message is recorded as long as caller continues speaking. This attachment is ideal for receiving orders.



**Tape Adapter** modifies the DCR-1 so that user can record outgoing messages in his own voice. Includes microphone and endless tape cartridge (1½ to 3 minutes). Message can be changed as often as desired.

**Model T-t** Electronic Secretary. Answering unit only. User records outgoing message in his own voice. Endless tape cartridge (30 seconds to 2½ minutes). Message can be changed as often as desired.

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to trim 200 miles of line at $40 per mile or $8,000. If after trimming 160 miles of line the responsible manager realized that the authorized total of $8,000 for that time period has been entirely spent and he discontinues further trimming, he will finish the budget period exactly on the mark.

In the usual comparative report it would then appear that the trimming part of the maintenance program has been done exactly in accordance with the budget. Such a conclusion is, of course, fallacious and could not be reached if comparative data or reports supplementing such data indicated the productivity level at which the project was estimated and that level at which the project was done. To ignore the productivity factor in budgeting is to carry into future plans the efficiency levels of the past whether good or bad; on this basis, prior years efficiency (or lack of it) becomes a standard. Similarly with respect to budgeted construction expenditures, any direct comparison of the budget with actual results over any given calendar year is valueless unless, along with it, there is available some measurement of accomplishment as compared to what was estimated to be realized for such estimated expenditures.

An entirely different concept of budgeting from the usual procedure outlined above is necessary if we are to make the budget the major administrative tool of management which it can be made to serve. For this purpose, we should adopt the principle that all levels of management should play a part in preparing the budget to the extent that they are to be held accountable for performance and that a full explanation will be expected for all sizable variations from this estimate.

The procedure I envision is one which assigns to each management level, where effective control is to be exercised, the associated responsibility for developing and carrying to completion a plan of operation within the over-all objectives of the company. These levels of management control will, of course, as inferred earlier, vary between companies because of size and geographic dispersal in the operating area, it may, in fact, vary between divisions in the same company.

**Left to right: H. A. Houston of Centralia, Mo.; A. T. Renn of Chicago, and A. J. Stults, advertising manager of TELEPHONY.**

It should not be assumed that, in assigning budget responsibility to management levels lower than ever before, we place a burden with which the manager is unprepared to cope. The fact is that a manager, capable of effective control, when given basic data in regard to anticipated wage levels, etc., because of his proximity to the job is in a preferred position to develop the estimated costs of carrying out his responsibilities. Budgeting is merely an extension of good management; the ability to control is born of job knowledge and job knowledge is in turn the basis of effective planning.

Certain minimum requirements are necessary to make such a plan operative and I would like to outline these merely for a better appreciation of what I believe can be achieved from such a budget procedure:

(1) *Budget Period.* A minimum budget period of three years is contemplated with the first year (budget year) shown by months, the following year by quarters and the subsequent year shown in total. Three years is chosen primarily from point of view of programming construction work, since, generally speaking, construction programs should not be subject to turning off and on due to temporary considerations applicable only to any one calendar year. For purposes of comparison and control throughout the budget year, no changes should be made in the original budget, and all explanations of variations throughout the year should be referenced to this original budget.

(2) *Present View of the Budget.* Recognizing that any plan or program must be somewhat flexible to permit effective management, it seems desirable to prepare a quarterly report on key items of the budget which will show the budget, actual results to date, increases or decreases, and "present view" for the budget year. A supplemental quarterly report will provide the forecast for the comparable quarter for the following year by months, so that currently a forecast by months for the ensuing 12 months is always available. On this basis, all justifiable changes from the original budget and explanation thereof will be reflected through the quarterly reports, with the original budget figures being retained for comparison and control purposes.

(3) *Contents of the Budget.* Such a procedure contemplates that the budget will be built up by components by areas of organizational responsibilities. Several stages of coordinated review during compilation should be allowed in order to minimize the amount of reworking necessary during its development to keep the end product on a realistic basis. It is this phase which

**Left to right: A. E. Sikes of Glennville, Ga.; W. S. Richardson of Chicago; J. K. Galloway of Winter Park, Fla., and H. A. Cunningham of Albany, N. Y.**

requires someone to be charged with the responsibility of coordinating the budget throughout its preparation and the scheduling of the components required in its development, so that information required from one department in the development of the estimates in another department will be available at the time necessary to meet the scheduled completion date of the final document. During this period, allowance must be made for the necessary reviews by top management as an alternative to a complete reworking, if the indicated end results on this preliminary basis suggests some changes in timing of any major elements included in the basic program. The responsibility for the preparation and dissemination of budget comparison data should also be placed in this same area.

With the above in mind, we visualize the following components of the budget:

(1) *Construction and Operating Budget.* This section should comprise that portion of the company program which comes under the supervision of the officer responsible for the operating functions of the company. In most General companies, this officer is designated as operating vice president. Included herein would be:

(a) Construction program supported by projects. A detailed procedure should provide for a method of reporting on actual expenditures which will permit comparison with not only projects comprising the total construction program, but also with individual work orders and/or routine expenditures which make up these projects and which allow for the carry-overs from one calendar year to the next in both the estimates and the actual results.

On such a basis, it should be possible to maintain on a continuing basis a "present view" of construction expenditures by projects and in total for any given year. To be effective, such reporting on actual construction expenditures should also show by work orders the status of the physical work as a per cent of completion and showing a current estimate of the amount of expenditure necessary to complete the physical work called for in the work order.

As a part of this phase, the budget projects could provide the basis for an intelligent authorization by management of a complete construction project well in advance of the preparation of the associated work orders usually authorized on a piecemeal basis and without full appreciation of the overall effect on company earnings of the complete project of which these piecemeal work orders are only a part.

(b) Departmental expense budgets made up along the lines of areas of responsibility, rather than by accounts, but in such a manner that final summarization by accounts is possible. The level in the organization below which this accountability would not be demanded would determine the extent of the detail necessary. It should be appreciated that measurement programs for determining efficiency ratios should be most helpful in setting up the estimating procedures in this area and permit the scheduling of improvements in productivity, and hence, expense savings on a realistic basis.

**Left to right: C. D. McLellan of Lansing, Mich.; L. W. Reynolds of Ontonagon, Mich.; H. J. Boyd and Walter Allguire, both of Alexandria, Minn.; C. E. Brown of Mansfield, O., and G. J. Kent of Washington, D. C.**

(c) Estimates of station movement by districts and divisions expected to develop from "over-the-counter" business and which can be cared for with the construction work scheduled and contemplated.

(d) Estimate of revenues to be shown by appropriate geographical areas and to be based upon the continuation of the present tariffs and present toll settlement arrangements. These estimates, therefore, are predicated upon growth in stations and toll business which can be expected from the continuation of present policies and economic conditions as reflected by station growth to be obtained without giving effect to the marketing and sales program.

(2) *Marketing and Sales Budget.* This section should be set up separately in order to determine the relative profitability of any marketing and sales program and should contain the details of the expense of the department, as well as the units of sales as set up in the sales quotas. This section should also submit for inclusion in the final budget, the estimated revenues and planned additional expenditures for subscribers equipment expected to result from the efforts of this department, which will have to be superimposed upon the operations' budget, which was predicated upon "over-the-counter" business only. Reporting would have to be set up on a comparable basis for budget comparisons and control.

(3) *Personnel Department Budget.* This section should not only include the expense of the personnel department but also the expended dollar effect on operating expenses and construction expenditures of any general salary and wage adjustments contemplated. Such a procedure permits all other sections of the budget to be estimated on the basis of a continuation of existing wage scales, and provides a means for bringing into focus the over-all effect on costs and earnings of all contemplated changes in wage and salary schedules. These estimates should be submitted in a form which would permit distribution by final accounts.

(4) *Advertising and Public Relations Budget.* This section should include the expenses to the company for those items coming under the supervision of the public relations director, and should be presented in such a way as to facilitate the final compilation by accounts.

(5) *Accounting, Legal and General Office Expense Budget.* This section should be prepared in the same detail to which it is planned to hold section and department heads accountable for control of expenses. Taxes and depreciation should be included in this budget as separate items. (Obviously, in the smaller companies, several of these sections listed above could be combined when functions are carried out under one operating department).

(6) *Revenue Requirements Budget.* This section should include the estimate of expenses of this department for control of expense purposes in line with the principle of budgeting expenses by sections and departments. The major requirement of this section of the budget, however, becomes one of reviewing the resulting rate of return following the compilation of the several sections of the budget listed above.

Upon reaching staff agreement that the several budgets submitted by the various areas of responsibility are realistic, and that they represent efficient operation, it is then the re-

*(Continued on page 148)*

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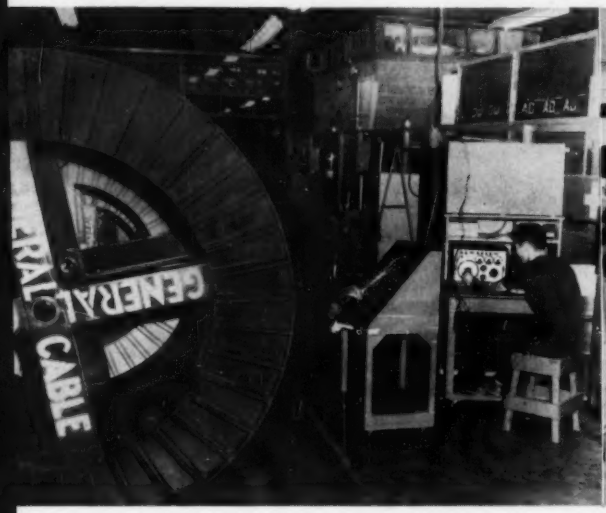
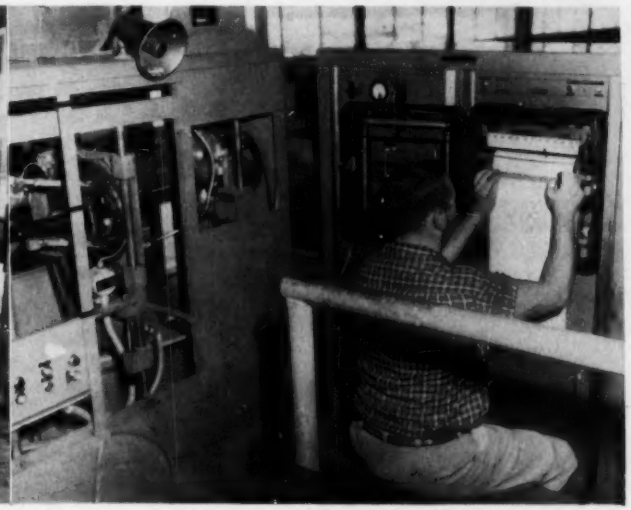



Final testing of telephone cable for capacitance unbalance.



Concentricity Gage: Polyethylene jacket of telephone cable being checked, during processing, for conformance to sheath thickness requirements.

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# Adequate Audit Trails in Mechanized Accounting

By BRUCE P. OLSON*

*(An Accounting Conference Address)*

THE DEVELOPMENT of mechanized accounting in recent years has introduced a new concept of record-keeping into the field of accounting. Integrated data processing has had a profound effect on accounting procedures and techniques of recording, and this, in turn, has given rise to the reappraisal of the techniques applied by the auditor.

It is easy to understand the immediate reaction of bewilderment that the bookkeeper exhibits upon the replacement of his well understood hand posted ledgers with the mysticism of punched cards, magnetic tapes, drums and disks. As one after another of his journals, books of original entry and ledgers are thrown into the trash he realizes that figures he used to see are no longer visible to him. Bewilderment changes to anger when he learns the figures he so lovingly checked off as they made their way through subtotals, totals, and grand totals into the final ledger are going to become holes in cards. Anger then dissolves into panic when he learns the cards with punches will be fed into a computer and placed in a memory from which they will be erased and lost forever as they are replaced with up-dated information.

Is it any wonder that this bookkeeper would insist on some method of reconstructing his figures — that pathways or trails be left in the processing routine so that he can find some of his figures? Because of this there have been created many unnecessary and costly steps in mechanized accounting programs under the guise of providing audit trails.

The determination of the adequacy of audit trails in mechanized accounting programs is dependent upon two factors: The adequacy of the system of internal control and the existence of the machine accounting controls. It is appropriate then to review these factors before considering the type and extent of the audit trails which the auditor will ask to be included in a mechanized accounting program.

### *Development of Internal Control*

In its infancy, auditing consisted of checking the clerical accuracy of bookkeeping records. As the years passed, businesses required the CPA to enlarge the scope of his engagement so as to include his professional opinion on the fairness of financial statements. It became important for the auditor to examine and investigate the nature of transactions in order to form the opinion he was being asked to give. He soon found that it was no longer feasible to continue the detail proof of clerical accuracy and at the same time inquire into the nature of a company's transactions.

And so evolved the reliance upon the system of internal control which, after proper review for adequacy, would permit the auditor to test only selected transactions and certain of the clerical computations in order to form his opinion. As the complexity and size of our modern companies evolved, the testing of records became more and more important.

In the early thirties, auditing textbooks rarely mentioned the term "internal control." Reference was generally limited to a few remarks on internal check. One text of that time described internal check as "an accounting device whereby a proof of the accuracy of figures can be obtained through the expedient of having different persons arrive independently at the same result." The text went on to say that "a proper system . . . requires that the same result be obtained not only independently but also by employing a different method."

The public accounting profession was becoming aware of the significance of internal control and its relationship to the reliability of financial reporting and, in the later part of the thirties, the profession included the phrase "we have reviewed the system of internal control . . ." in the CPA's short form of audit opinion. At this point, we have advanced to the idea of a system rather than a device and to control rather than check. In a surprisingly short time—about 12 years—it was felt that the general public had become aware of the accountants' responsibility with respect to internal control and dropped the phrase from its certificate. Today, it is implied and has become understood that the CPA, as an important part of his examination, will review the system of internal control.

As the significance of internal control as an auditing tool became recognized, the accounting profession gave rise to long and serious consideration as to its scope and meaning. In October, 1958, after many years of study, the American Institute of Certified Public Accountants released its Statement on Auditing Procedures No. 29 which relates to the significance of the auditor's review of internal control as it pertains to his examination.

This statement is of importance, not only to those engaged in public accounting, but also to those who are involved in the design and supervision of the more complex and involved accounting systems.

Internal control, in the broad sense, is said to include both accounting and administrative. Accounting controls, as defined in the statement, comprise the plan of organization and all methods and procedures that are concerned

*Mr. Olson is Assistant Manager of Ernst & Ernst of Chicago, Ill.

mainly with and relate directly to the safeguarding of assets and the reliability of the financial records. These controls relate to the system of authorization and approvals, separation of duties concerned with record-keeping and accounting reports from those concerned with operations or asset custody, physical control over assets, and internal auditing.

Administrative controls are defined as those which comprise the plan of organization and all methods and procedures that are concerned mainly with operational efficiency and adherence to managerial policies and usually relate only indirectly to the financial records.

The statement goes on to describe the responsibilities of the CPA with respect to the scope of his review of accounting controls and administrative controls.

Although this publication has recently focused attention on internal control, the CPA has used it as a part of his audit technique for some time. Its importance perhaps has become more widely recognized with the introduction of mechanized accounting and the birth of integrated data processing (IDP). IDP has been defined as the effective production of co-ordinated and uninterrupted flow of essential data needed by management in its decision-making, control and planning functions through the systematic organization of all related clerical routines. The CPA does not look upon integrated data processing, which has been made possible by mechanical and electronic equipment, as a development which will basically alter existing auditing techniques. Rather, because of the ability of the new equipment to furnish accurate, informative and timely information, the CPA will be able to eliminate most of the time-consuming tracing and footing of figures and concentrate his time more effectively on the interpretation of financial information.

**Left to right: Earnest Johns of Remer, Minn.; Gilroy G. Arvig of Pequot Lakes, Minn.; A. H. Brown of Byron, Ont., Canada; Martin Prickaerts of Toronto, Ont., and Herman E. Hageman of Lorain, O.**

### *Evaluation of Internal Control*

An evaluation of the system of internal control, then, is the starting point in the determination of the scope and nature of audit trails to be introduced into the mechanized accounting program. The evaluation requires an appraisal of the entire organization, its product, its methods of production and distribution, its customers—in short, the business. A study of any one part of the system should start with a careful consideration of the plan of organization as related to the studied activity, the reports generated in connection therewith, and the nature of the review inherent in that activity.

Organization, then, is the key to an effective system of internal control. The division of duties among personnel responsible for the originating and recording of financial transactions has long been recognized. However, this concept of the division of duties, while very important, touches only a small part of the importance of the plan of organization in the development and evaluation of an effective system of internal control.

The internal auditor or systems man is often put off by top management when an attempt is made to study the plan of organization, particularly at the levels where policy decisions are made—or should be made. Often he hits the brick wall of established lines of authority and responsibility that were constructed when the company was small and when operations were uncomplicated by modern production and sales techniques.

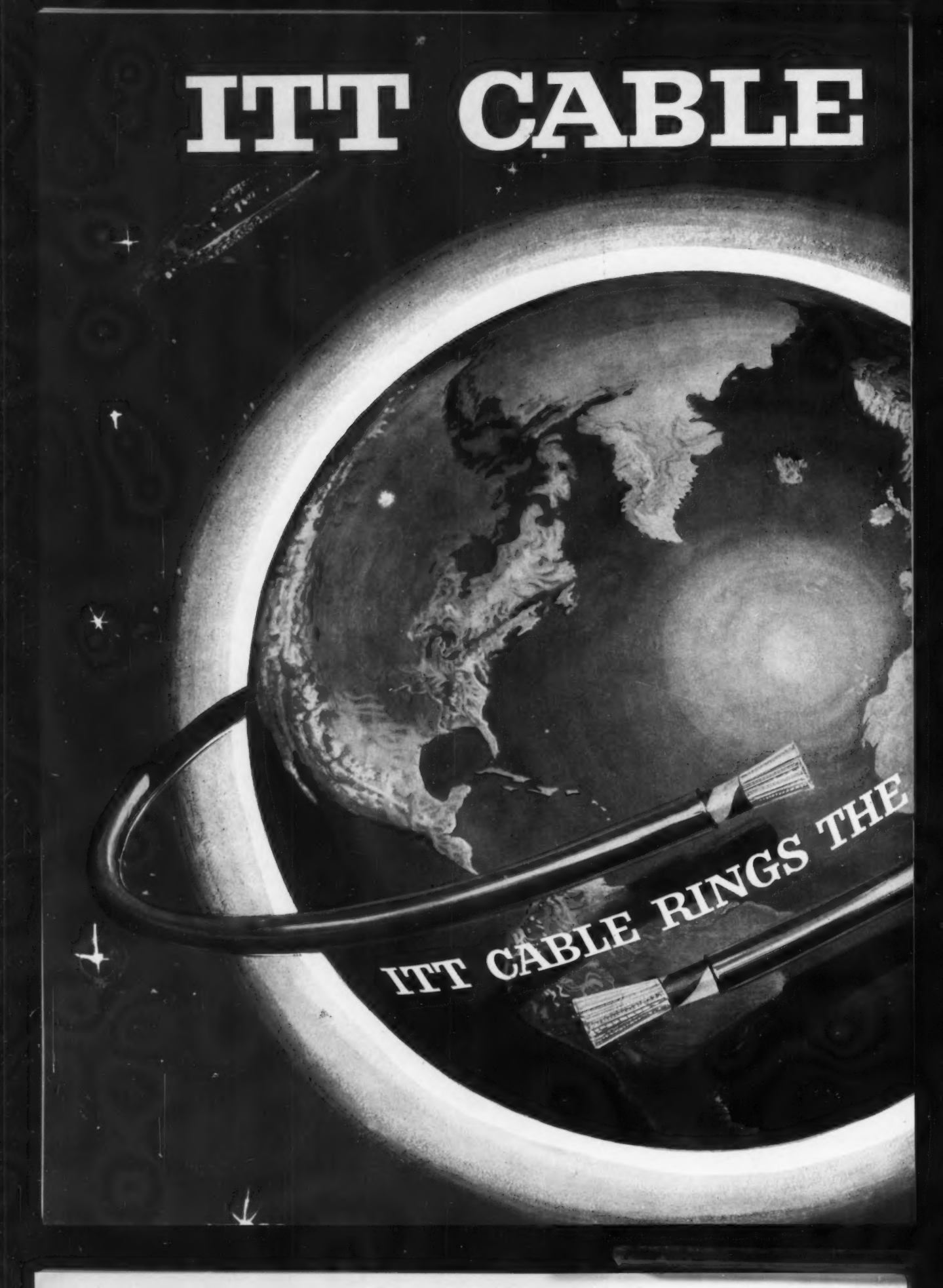
It is virtually impossible to install an efficient system utilizing mechanized equipment when the lines of authority are ill defined. An unfortunate example of this very thing happened recently to an organization in Chicago.

This company installed a small computer and among other things programmed its billing, receivables and inventory control activities on the equipment. The programming included proper machine processing controls and due recognition had been given to the review of input and output data. Recognition had been given to all factors involved in the establishment of an effective system of internal control, except one—the only one that could not be rectified—the owner's brother. His job title was that of sales manager, although in terms of authority he bossed people as if he were the executive vice president; in terms of responsibility he sounded off as a minority stockholder sometimes does, and in terms of duties he performed a function equivalent to that of an order writer.

Accounting procedures in effect prior to the introduction of the electronic equipment permitted numerous variations to take care of brother's whims.

*(Continued on page 46)*

**Left to right: Elizabeth Journey and Kathryn Journey, both of Higginsville, Mo.; Mrs. Howard Utech of Warwick, N. Y., and Mrs. Milton Vail of Springfield, Mo.**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Built into the program for the computer were provisions for most of these variations, but the velocity of the equipment generated exceptions at an alarming rate. Brother's special delivery dates, customer favoritism and general meddling in production schedules had amplified the velocity of the exceptions by a hundred-fold. He had been able to talk other people into hiding the many exceptions he generated, but the machine could not recognize his influence. The programmed audit trails in this instance became the auditor's trial!

Organization is the basic element when we talk about internal control — not just the organization of the accounting department, but the entire organization. It must provide sharp lines of authority—proper delegation of duties and fixed responsibilities. The machines are capable of doing a tremendous amount of work, but people must still do the thinking and directing.

### *Reporting and Review*

With the organizational plan established, consideration can be given to the reporting and review of operations. Reporting in the broad sense is not limited to the financial reports, such as balance sheets, income statements, forecasts and budget operations, but also includes reports on sales statistics, operating manpower reports and other data which give the reader a report on some phase of the company's operations or condition. The inclusion of the reporting function as an element of internal control is significant when we come to mechanized accounting. The diversity of reports, all *stemming from the same basic information or input data*, furnishes us with a check of the input data which can lend considerable strength to the system.

For example, consider a payroll application. Many reports stem from the worker's report of hours worked or units he has produced—payroll registers, earnings records, pay checks, manpower reports, direct labor costs added to inventories, indirect labor budget reports, credit units for SUB, group insurance, payroll taxes, etc.

The audit of these reports when prepared from the handposted ledgers was comparatively simple, because records were available for visual checking at any point in the process. The preparation of these same reports on mechanized equipment provides no such visual records, and consequently prevents audit checking back along the trail of transactions. The question of whether or not this trail must be recorded in the mechanized system cannot be determined until after there has been a review of the internal control.

**Left to right: F. J. Le Blanc of Wamego, Kan.; C. L. Zoltani of Conway, Pa.; E. J. Ladd of Ft. Payne, Ala., and Dean R. Wymer of Honolulu, Hawaii.**

The procedures employed in the processing of source data may be unchanged by the introduction of machine accounting, but the system of internal control may well be greatly strengthened by the introduction of this equipment. Part of this added strength arises from the fact that all reports, such as the afore-mentioned payroll reports, are prepared from identical data.

When these reports were prepared from handposted records, it was not essential (except perhaps for certain governmental reports) that the data in each report be identical. The cost of reconciling the amounts in such reports was often far greater than the value received from such accuracy and because the reports might vary, however slightly, they lacked a positive element of control.

But reports in a mechanized accounting program must necessarily be prepared from the same data and an error in the source material must be perpetuated in all reports. A fictitious employe added—someone is going to find unaccountable hours or dollars or people in his report. An error in the quantity of production—someone will find negative inventory amounts or other improbable results. Distribution of expense to the wrong account or department — budget variations will signal the error. Control? With proper programming, reports can comprise a significant source of internal check.

The review of operating results is another basic part of the system of internal control. Review in this sense can be anything from a formal examination by independent certified public accountants to simply having one person looking over another person's shoulder as an operation is performed. Review can take the form of pre-review or post-review. The systems man generally has the responsibility for pre-review. It is his job to see that transactions are scheduled to flow through centers and controls which will minimize errors and produce accurate records. With respect to electronic devices, programming becomes an important part of the systems man's review. It is at this point that unauthorized transactions can be vetoed before entering the processing state.

Post-review is generally considered to be the area of the internal auditor. Certainly, the auditor must understand the programming of transactions, whether manual, mechanical or electronic, in order to evaluate the finished work, but his principal area of responsibility is the output of the system. In either the pre-review or the post-review, one essential requirement exists. The reviewer must be independent. He must be free of retaliatory action by the person reviewed and he must be free from self-interest or bias. The programmer cannot review his own program; the mechanized accounting department cannot assign one of its own members to review the efforts of that department.

The review of the plan of organization and related reporting and reviewing activities is the proper starting point for the evaluation of the system of internal control. It is not the purpose of this discussion to go into the methods used to establish effective control, such as budgetary controls, standard costs, periodic operating reports, statistical analysis and the dissemination thereof; nor of the importance of training programs to strengthen the system of internal control or the use of protection devices such as cash registers, safes, etc. Each of these topics requires a discussion of its own.

Mechanized accounting may eliminate many of the checking and tracing routines that the auditor has used, but it will replace the need for these tech-

*(Continued on page 149)*

# Rate Preparation and Proper Presentation as It relates to Accounting

By EDWARD E. KNAUB*

*(An Accounting Conference Address)*

MY SUBJECT is rate preparation and proper presentation as it relates to the responsibility of the company accountants.

The following statements on the subject are my own and should not be construed to imply the view of The Public Utilities Commission of Ohio.

The fact that I had the honor of being invited to talk to you should not be construed to mean I am an expert. In fact I was only an expert for less than two months and that was immediately following my graduation from a recognized business university. I can truthfully saw that if I knew half as much today as I thought I knew then, I might be able to squeak through as an expert.

Since we are going to talk about the accountant's responsibility in the preparation and presentation of rate proceedings, it might be well to define accounting.

Accounting has been defined by a committee of the American Institute of Accountants as "the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results thereof."

George O. May in his book "Financial Accounting" has this to say regarding accounting:

"It is an art, not a science, but an art of wide and varied usefulness. The purely recording function of accounting, though indispensable, concerns only technicians. Its analytical and interpretive functions are of two kinds: one type of analysis is intended to afford aid to management in the conduct of business and is of interest mainly to executives; the other type leads to the presentation of statements relating to the financial position and results of operations of a business for the guidance of directors, stockholders, credit grantors, and others. This process of financial accounting, therefore, possesses a wide importance for persons who are neither accountants nor executives."

I do not concur in the thinking of some that the accountant controls a business. I think the accountant records, analyzes reports, and interprets the facts which serve as a guide for management.

At the time I attended school we were taught that there were only four little rules to accounting, but it was necessary to learn the meaning of the rules, not just the words, and this is true of many things that get into the accounting field. In a few minutes any one could memorize the following rules, but it really takes some experience to master their meaning:

Debit what you receive.
Credit what you dispose of.
Debit what costs you value.
Credit what produces you value.

As Richard S. Storrs stated:

"The rules which experience suggests are better than those which theorists elaborate in their libraries."

And, Christopher Martin Wieland, Ger. Poet, said:

"However learned or eloquent, man knows nothing truly that he has not learned from experience."

Actually, accounting has progressed a long way from the time when debits and credits were the chief items of importance. The analytical and interpretive functions of accounting, by far, transcend in importance the mere bookkeeping aspects. It is the latter which become of such importance in the effective preparation and presentation of data for rate case purposes. Accordingly preparation of rate proceedings should start many years prior to the date of filing an application.

In an inflationary period, such as we are now experiencing and have been experiencing for many years, there are many totally new problems presented. I cannot overemphasize the responsibilities of the accountant to properly cope with the analytical and interpretive problems presented in this new era. They require special attention and preparation to meet the basic problems of adequately meeting the burden of proof in rate cases.

From my observation, there are several matters in the accounting field which appear to me to have been taken

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E. E. KNAUB

too lightly by some telephone companies, which I should like to discuss in relation to the preparation of a rate proceeding. In fact, in my opinion, this is preparation. They are as follows:

(1) Determination of proper accounting and support of such determination.
(2) The full acceptance of the burden of proof by companies applying for rate increases.
(3) The important challenge and opportunities for good public relations in handling the facts in rate matters.
(4) The special importance in telephone rate cases of accurate station count at each year end.

I shall discuss these subjects in order.

All accounts have to do with cash transactions and these are the easy ones to account for, but when we get into accounting where some judgment factors are of prime importance we get into difficult areas. One of these areas is the matter of the depreciation accrual rates. However, there is a question in my mind if careful consideration has been given to this important problem by all telephone companies. The determination of depreciation accruals may be a joint responsibility between engineering and accounting, perhaps even with the engineering having the major responsibility. Nevertheless, it is the accountant's responsibility to see that studies on this subject are reviewed periodically, at least every three years, in order for the accountant to carry out his responsibilities in reporting and interpreting the facts to management and to rate bodies among others.

Here, again, it is necessary to get the meaning of depreciation accruals—certainly you know the accounting treatment, but have you had time to actually get into the various elements of depreciation? With your permission I will discuss the various elements, as I understand them.

What is depreciation?

Depreciation and depreciation accounting are two different and separate things. All units of property are at one time new; later they are mature or well broken in for efficient work, and finally they wear out and die, or are scrapped. The steady progress toward the scrap heap is symbolized by the word depreciation. In other words, depreciation is actual, or factual, caused by the laws of nature. Depreciation accounting is an estimate designed to properly reflect over the years what is happening as a physical and economic fact.

**Left to right: Garland T. LaPrade of Martinsville, Va.; Donald Jahn of Tomah, Wis.; Sam Olive of Ripon, Wis., and C. D. Ehinger of Decatur, Ind.**

Depreciation accounting is an attempt made by man to time the assessment of the cost of the eventual loss due to depreciation with the particular annual periods in which it occurs.

The trick is to harmonize the two because of the definite necessity for maintaining the integrity of the investment in property and plant so that the business does not die when its tools wear out.

Therefore, depreciation accruals must be sufficient to maintain indefinitely the ability of the property to continue to render the service contemplated by the owners when they invested their capital.

Depreciation accruals should take into account contingencies caused by "Acts of God," demands from public authority, as well as obsolescence. In fact, the U. S. Treasury Department recognizes this. They issued a bulletin many years ago which stated:

"The consumption of trade or business capital represented by depreciation is an operating cost, the deduction of which in computing net income is specifically provided for in the Internal Revenue Code as follows: Depreciation, a reasonable allowance for the exhaustion, wear and tear of property used in the trade or business, including a reasonable allowance for obsolescence."

Depreciation accruals are definitely an operating cost and not merely a theoretical cost and it must be recovered in the sales price just as other costs are. Any business could vanish just as surely by failing to collect from its customers to cover depreciation, as it would if it failed to allow for labor and material costs in its prices to purchasers.

Certainly, regulatory bodies have authority to prescribe rates of accrual. However, if the rates of accrual so prescribed do not take into account all of the various factors, and are not sufficient to maintain the integrity of the investment, the wages paid for the use of money will be higher. This raises the earnings requirements and, therefore, works to the disadvantage of the public.

I shall endeavor to point out the different phases that must be taken into consideration in determining depreciation accounting, as I understand them. In trying to harmonize depreciation accounting with actual depreciation the following must be considered:

**Left to right: Russell Hosmer of Union, Me.; C. J. Reynolds of Chicago, and F. A. Morris of Rochester, N. Y.**

Depreciation has been described by some to be subdivided under the following headings:

(1) Physical.
(2) Functional.
(3) Acts of God.

Physical depreciation is wear and tear, which involves friction vibration, which is purely mechanical loss, metal fatigue, oxidation, etc., which are caused by natural forces. Certainly, adequate maintenance can retard wear and tear.

Under functional causes there are to be found losses caused by inadequacy, which are losses of investment brought about by increased demand which makes it necessary to replace an otherwise efficient asset. For example, a unit of property may be physically fit, but inadequate to the demands of the public.

Another set of causes of loss of investment may be gathered under the heading of supersession, which general term defines a loss caused by the appearance of more efficient assets than those presently employed making it necessary to replace present equipment if better service is to be met. Another element is obsolescence, defined by the courts as changes in the art, shifting of business centers, loss of trade, inadequacy supersession, prohibitory laws, and other things which, apart from physical deterioration, operate to cause plant elements, or the plant as a whole, to suffer diminution in value.

The above is cited for the purpose of showing the necessity of the attempt made by man to harmonize depreciation accounting in such a manner as to keep the investment intact.

Under the heading "Act of God" must be segregated losses of investment which are attributable to accidents, including fires, structural and those caused by disease; that is, crystallization, electrolysis and failure of supply in the case of use of natural gas or local water companies. Demand from public authority also is an important element.

In spite of the fact that more careful studies have been made on this subject, it may be said that a human being is unable to prognosticate some of the elements far enough in the future (such as Acts of God, and demands of public authority) to adjust the accrual rates to have the investment recouped at the time of the retirement of some units of property, and it is also true that some units of property may last longer than originally estimated. Through research work, in most instances, possible changes in the art can be anticipated on the average for all classes of plant far enough in advance to make any necessary periodic adjustments in accrual rates. In some cases, more specific interpretation and adjustment can be made.

**Left to right: Manichi Nogami and Saburo Ninoseki, both of Tokyo, Japan; William Surgi Sr. and Roy J. Surgi, both of New Orleans, La.**

It is necessary for constant studies to be made of the depreciation accruals, say every two to three years, if we expect them to keep pace with changes affecting the actual depreciation, especially in an era of fast moving developments, and inflationary prices constantly changing.

Speaking of the effects of inflation on depreciation accounting, I am reminded of an excellent article appearing in the *Public Utilities Fortnightly*, (Sept. 11, 1952), by Chairman Harold A. Scragg of the Pennsylvania commission, in which he said:

"In addition to looking after the interest of the consumers, it is the responsibility of the commission to be careful not to impair the integrity of invested utility capital. . . .

"Any business whose capital is shrinking in terms of relative purchasing power is failing to recover its total economic costs, including adequate return, and, in fact, is cannibalizing its own capital. The attraction of new capital in these circumstances becomes exceedingly difficult and only under unfavorable terms, which results, in the long run, in higher prices to consumers or poor service, or both.

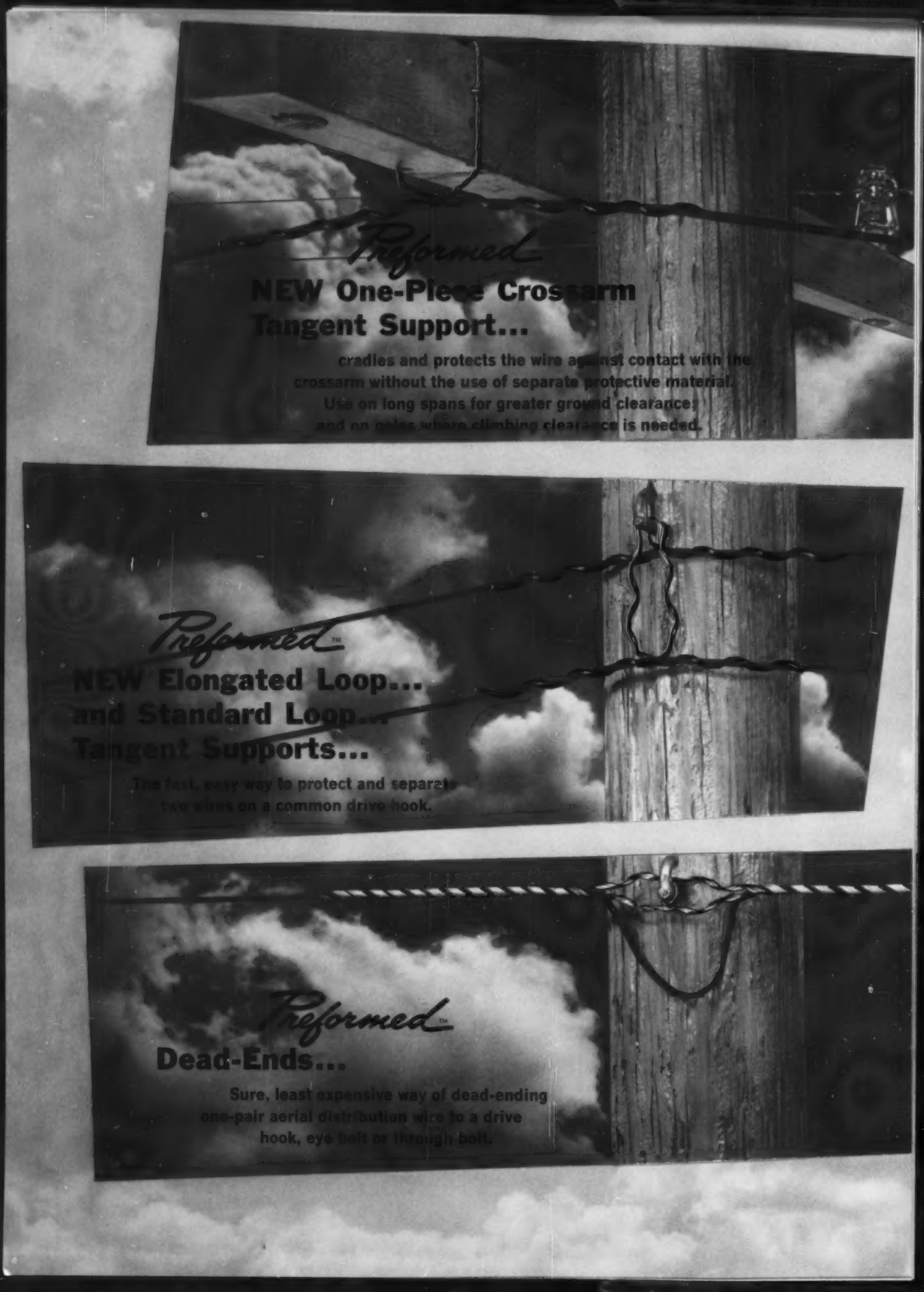
"A logical conclusion is that in determining an equitable and fair rate of return, consideration should be given to restating the capital base to which current earnings are related in terms of dollars representing a uniform unit of wealth or purchasing power. The law of Pennsylvania, which requires the commission to give consideration to the reproduction cost of the property in which a utility's capital is invested, recognizes this basic economic principle."

While neither the commission, generally, nor the Internal Revenue Bureau, has specifically recognized the effect of the decrease in the value of the dollar on the determination of depreciation provisions or allowances, the matter is getting increasing attention and study in many quarters. Some commissions have given some recognition to the problem. It has for a number of years been commented on in the report of the Rate Committee of the NARUC. Accountants, economists, financial and business men, generally, are getting more concerned about this special aspect of inflation. I call it to your attention as a problem deserving your careful attention because I am convinced that as inflation continues its effect on depreciation determination will be of increasingly greater importance in future rates cases.

Whatever aspect of depreciation being considered—be it the determination of the appropriate annual accrual, the determination of the effect on the latter of the change in value of the dollar—the most important problem, in my judgment, is the matter of the preparation and submission of adequate proof of the reasonableness and validity of the result adopted. The fact that judgment is involved does not in any sense relieve the necessity of submitting proof attesting to the reasonableness of the judgment applied. This is too often overlooked in rate proceedings. Too often when companies rely on the commission and its staff to "come up with the right answer," they find either that the views of the commission were different from what they thought or that the opposition has raised so many questions that without sound affirmative proof on the part of the company, the commission is precluded from coming up with a sound answer.

This brings me to my second point—

*(Continued on page 152)*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# Report of USITA Commercial Committee

By K. L. LAWSON, *Chairman*

THE Commercial Committee has undertaken the responsibility of studying, on a continuing basis, the many new commercial aspects of modernization, automation, centralization and streamlining of telephone service. Every major step in this evolutionary process affects our customers in some way. There is much evidence to support the statement that, in many areas, not too good a commercial job has been done to prepare our customers in such a way that the changes are recognized as better service and more efficiency in our operations, hence holding down rates and, in general, gaining customer acceptance.

Dial conversions, machine accounting, mark-sensing of toll tickets, Direct Distance Dialing, 2-5 numbering, growth of extended area service, and recorded intercept are but some of the processes of change that pose a commercial responsibility for customer education.

As an aftermath of many technological changes, we are startled to realize that many of the avenues of daily, weekly or monthly contact with our customers are eliminated. For example, most medium and small-sized dial conversions eliminate all telephone company personnel from the communities involved. This takes away local payrolls, and forms a barrier of isolation between company and telephone users.

Modern plant operations also have brought about centralization of personnel to provide greater flexibility in dispatching, with resultant increased productivity. This means better service for the customer, but unless he understands, he will resent not seeing almost daily the familiar face of the combinationman or exchange manager in the community.

We feel that this is a matter of prime importance in planning and evaluating a public relations program. Regular and frequent contacts either in person or by telephone should be made with customers in such exchanges. This is especially important with business and other leaders in the community.

Centralized accounting and machine billing bring about immediate commercial repercussions. The local postmaster loses the sale of postage if the statements are mailed from one exchange. The new punch card statement is puzzling to many subscribers, especially where elderly people are involved. A radically different type of toll statement requires adjustment in the internal auditing and checking processes of larger customers.

Several companies which have entered this field have found that it is wise to use one or two exchanges or areas as testing grounds for such new methods. Customer reaction, routine problems and ideas for improvement can then be determined and appraised and necessary corrective measures taken before the plan is adopted for the company as a whole. Better methods of customer education, or explanation, also can be planned.

The commercial program of the 1959 annual convention deals with these and other phases of the subject. These are but random considerations touching on the over-all problem. Your committee intends to prepare reports throughout the year which will reflect the experiences of various companies which have successfully carried out one or more of the modernization steps and still maintained, or even improved, good customer relations. It is hoped that the progress of the committee's efforts may be made available to the entire industry through state telephone associations, USITA bulletins and the industry publications.

**Left to right: John Fox of Waldron, Mich.; W. J. Royen and B. E. Simonson, both of Washington, D. C.; and Francis X. Welch, Washington editor of TELEPHONY and editor of *Public Utilities Fortnightly*.**

# SHERRON STAINLESS STEEL BOOTHS

## prompt travelers to keep in touch

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In the hurly-burly of Boston's South Station, these bright and shining Sherron stainless steel multiple booths stand out . . . an oasis of convenience for hurrying travelers.

No need to scurry around in search of a telephone booth . . . or wait impatiently for one to become available. And no reason to give up making a call.

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# Some Commercial Aspects of Automation

By E. H. UTZMAN*

*(A Commercial Conference Address)*

INDUSTRIAL technology, or "automation," has liquidated two romantic workers—the telegraph operator and the steam locomotive fireman. A diesel locomotive still carries a worker listed as "fireman," but his main purpose seems to be for emergencies in the engine cab, if the engineer drops dead at the throttle or something. The coal burning locomotive will soon be a museum piece. The diesel is more efficient than the old steam locomotive. It can pull as many cars as a drawbar will hold.

The old telegraph operator, whose mastery of the Morse Code was sort of a sacrament, was romantic in a less lusty way than the fireman. The telegrapher's "bug" was the link which kept the universe together. The Morse operator has been replaced by electronic teleprinters. A generation ago the telegrapher was indispensable. Brokerage offices needed a telegraph operator to keep in touch with Wall Street. Newspaper offices had a Morse operator on duty to take the AP or the UP report. Trains' orders were conveyed from the division dispatcher's office by telegraph code. And, of course, the two big telegraph companies, Western Union and Postal, rested on a foundation of Morse men.

Telegraph operators handled a lot of confidential communications and walked through life with as many secrets as a priest, a lawyer or a doctor. A reporter filing an exclusive story had to depend upon the integrity of the telegraph operator not to "leak" the story to the opposition. They were noble breeds, the telegraph operator and the fireman.

So it goes with the telephone industry today. In the United States there are approximately 66 million telephones, more than half of the 117.8 million in the world. Each day in the United States 245 million conversations hum over the wires. There are more than 500 calls a year for every person. At any second of the business day more than 2 million people are talking on telephones in the United States alone.

As with the locomotive fireman and the Morse telegrapher, the telephone operator is feeling the effects of automation. Today, approximately 94 per cent of all the telephones in the United States are connected to dial systems. This is removing the need for local telephone operators.

Telephone people in talking shop today use terminology that was unheard of a few years ago. It's a sign of the times that shows the rapid advancements that are being made in our technology and service concepts. Commercial people will do well to be alert to such changes and their impact on public relations, sales, advertising, collections, directories, business office procedures and many other activities in this field. Here are some examples.

*2-5 Numbering.* The phrase "2-5 numbering" has become almost as well known with telephone customers as it is with telephone employes. This involves numbers for entire exchanges and requires great care and adequate explanation to our customers well in advance of the scheduled cutover date. Two years notice is not too long for large exchanges and one year should be a minimum. This gives customers time to change numbers of printed matter, signs, etc., so they will be ready when the change comes.

*Mark-Sensing and Machine Accounting.* Mark-sensing and machine accounting (data processing) require new billing methods, a new look for bills and toll statements for customers and sometimes a different procedure for payment. Here, again, public understanding and acceptance is a commercial job and an important one.

*Microfilming of Toll Tickets.* Microfilming of toll tickets, now being done by many companies, is a method that enables the company to furnish the customer with the toll ticket made by the operator at the time his call was made. This, too, has required much advance publication and subscriber education.

*Direct Distance Dialing.* Direct Distance Dialing (DDD) is becoming almost a household word in many areas. Acceptance of this service by the public requires careful advance planning ahead of conversions and adequate customer instruction. Conversion of CDO exchanges and institution of DDD and other mechanical methods usually means that a community will experience the loss or reduction of telephone personnel. This, also, is a delicate public relations problem and an important one. The trend is to move local operating and plant people to central points for greater efficiency, thus further reducing the telephone population in smaller exchanges. It then becomes an important responsibility of the company to maintain adequate contact with customers in these areas and see that the company is properly represented in community activities.

These are some of the responsibilities that concern us today. We, as an industry, are moving away from our customers. We must not overlook the importance of providing means whereby we can keep in touch with all of our customers. In our daily rush to convert our exchanges to non-attended dial operation, we must not overlook the fact that ours is a service organiza-

*Mr. Utzman is Commercial Superintendent of The Southwestern States Telephone Co., Brownwood, Tex.

tion and service is all we have to sell. To sell this service to satisfied customers we must keep in contact with these customers. If we convert our exchanges to dial operation, discontinue business offices in small towns, create collection agencies supervised by people other than telephone employes, it is not possible for the industry to keep "the common touch" that is so badly needed in order that adequate relations might be maintained.

Neither chance nor mere good fortune have brought this nation the finest telephone service in the world. The American people today enjoy this service as a result of their own enterprise and common sense. The people of this nation have found more and more ways to use the telephone in their daily lives. They have encouraged initiative and invention. They have made the job of providing telephone service a public trust. At the same time they have given telephone companies, under regulation, the freedom and resources to do their job as well as possible. In this climate of freedom and responsibility, telephone companies have provided service of steadily increasing value. In the years since World War II, the public demand for service has been so great that the industry has carried out the most extensive construction program ever undertaken. The people in America made this program possible.

Now, some 15 years after the war, the term "extended service" means much more than being able to provide a telephone for those who want it. Today, the telephone in America has gained many new dimensions as the industry offers more and more things to meet the wants of the American people, things that add even more variety and convenience to its service: Telephones in attractive colors that blend or contrast with any decorative scheme; telephones with illuminated dials that can be seen in the dark; telephones with push buttons to answer several lines; equipment that will automatically answer calls when no one is in and give and take recorded messages.

**Left to right: G. C. Kanney and V. J. Bradfield, both of Laporte, Ind.; R. C. Reno, editor of TELEPHONY, and J. P. Galligan of Burlingame, Cal.**

These are only a few of many. Telephone men and women with experience and skill, backed by the great flexibility of their communications network, are writing the story of steadily improving telephone service.

It is with concern now that we review some of the aspects of automation that confront us in the commercial department. We want to take this opportunity to discuss a few of these things previously mentioned with you now.

My company has been very active in the conversion of its exchanges to dial. At the end of World War II, we were approximately 25 per cent dial. We are now about 91 per cent. We have experienced many problems along the line.

One of the greatest, I believe, was subscriber education and acceptance of the company's dial program, particularly in small communities where it was necessary to convert either magneto or common battery exchanges to non-attended dial operation. To do this we found it necessary to eliminate the business office and move all commercial operations into a centralized business office. It was also necessary to create collection agencies on a contractual basis with people other than telephone company employes. We received the usual subscriber complaints by not being able to call up the local operator and obtain the time of day, or the whereabouts of the family doctor who did not answer his telephone. In other words, we began to lose the "common touch."

To overcome this condition we created a policy whereby our business office people in the commercial control exchange would contact by telephone at least 10 per cent of the CDO subscribers each month. In these telephone contacts we tried to determine the subscribers' reaction to our service. While this method of subscriber contact has proved highly successful, it does not take the place of personal contacts that were possible through 100 per cent local operation.

### *2-5 Numbering*

In our dial conversion program, we, of course, entered into the 2-5 numbering plan made necessary to fit into the national program designed for ultimate Direct Distance Dialing. Here again we were confronted with subscriber acceptance. Many of you are very familiar with these problems, but let me say that we cannot overemphasize the need for proper subscriber education in order that this program might be carried out successfully.

To do this, we feel that, at least in the larger exchanges, a two-year program should be outlined. This would provide sufficient time for business customers to consider the necessity of number changes. It will help the cus-

*(Continued on page 58)*

**Left to right: A. H. Brown and N. T. Sanderson, both of Byron, Ont., Canada, and J. A. Cheesman of Washington, D. C.**

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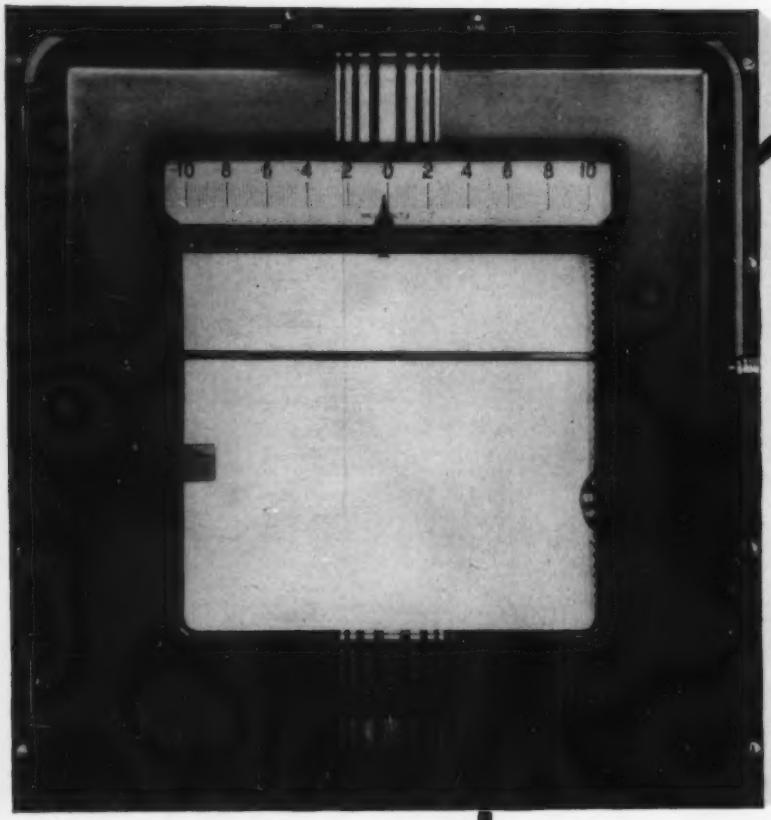


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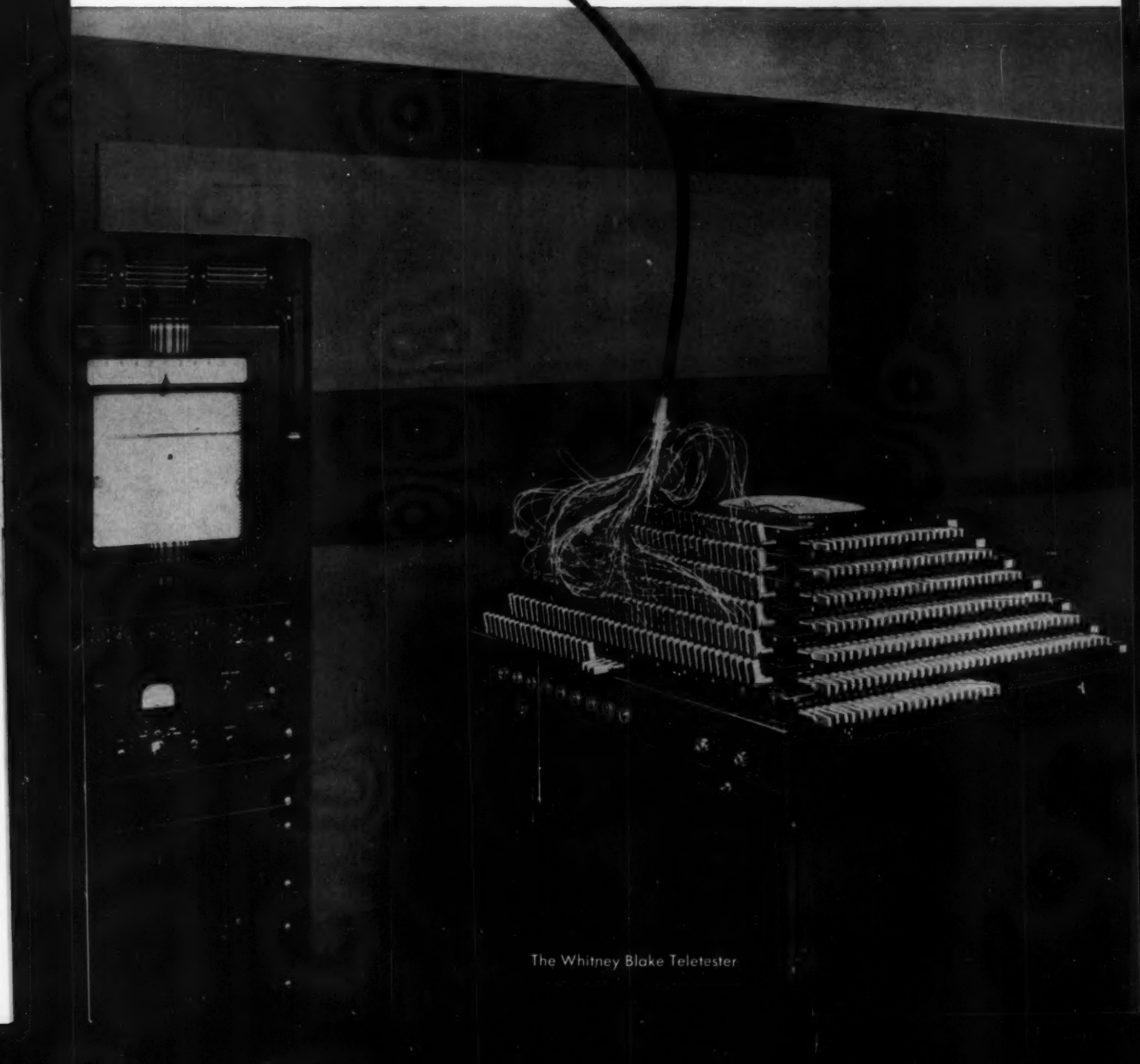

The Whitney Blake Teletester

tomer to plan his printing requirements where telephones numbers are used and to coordinate them with the telephone company's plans. We feel the telephone industry has an obligation to provide the subscriber with new telephone numbers as far in advance as possible.

There are many ways that this can be successfully handled. One way we have found that meets with very good subscriber acceptance is "dial number plates." These plates are printed with the subscriber's number and mailed to the subscriber with an explanation of how to mount them on the telephone dial, together with information as to when the new number will become effective. The use of dial number plates has proven successful particularly when dial conversions are made requiring a 100 per cent number change.

### *Microfilming Toll Tickets*

Many companies today are microfilming toll tickets and mailing to the customer the toll ticket that was made by the operator at the time the call was placed. This has met with very good subscriber acceptance in the areas where it is used. However, it has created a need for proper subscriber acceptance. Most companies that have used this method of billing toll tickets have first entered into a subscriber information program by notifying each subscriber of the company's plans, enclosing prints of toll tickets with detailed instructions on how to read and interpret them.

This is another phase of automation that affects our business offices. A company contemplating entering into a program of microfilming toll tickets should give consideration, above all, to the impact it would have on their public relations.

### *Machine Subscriber Billing*

Another aspect of automation that affects our business office operations is machine subscriber billing. Many companies today are using some form of machine billing of subscriber accounts. Machine billing of subscriber accounts has created quite a burden on commercial people. In most cases, it was necessary that the form of subscriber bill be completely changed since a punched card type of bill must be used.

Our company is one of the many companies that has entered into this program. While we have been able to improve many of our accounting methods, we have created problems, some of which we have not as yet wholly overcome in dealing with our subscribers. First it was necessary that we test subscriber acceptance of new billing practices and procedures. This was done by moving into the program gradually, billing only a few exchanges each month until finally all exchanges of the company were placed on machine billing.

There are many aspects to this phase of automation. You must first attempt to sell the subscriber on the fact that your company is trying to improve its methods of billing that will automatically provide him with an improved service. What we mean by improved service in this phase would be that the subscriber's account would be mailed out promptly when due regularly each month, enabling the subscriber to become educated to our billing and collection practices.

Some companies have used a very satisfactory method of advance publication. This publication was in the form of letters going to each individual subscriber, informing them of the company's immediate plans together with some long-range planning information. We recommend this as a very advisable step when any company is contemplating entering into a machine subscriber billing practice.

**Left to right: F. S. Givens and Ernest Jordan, both of Richmond, Va.; J. G. Bonner of Galion, O.; Mrs. C. T. Moore of Harrison, Ark., and Mr. Moore.**

**Mrs. Mayme Workman, secretary of the Independent Telephone Pioneer Association and traffic editor of TELEPHONY; and Bernard F. Robey of Anchorage, Alaska.**

### *Direct Distance Dialing*

Direct Distance Dialing (DDD) is now in effect in many areas of the United States and is coming faster than many of us may realize. This is another form of automation that we people in the commercial department should give due consideration to. The economic conditions of our nation today have brought about a vast increase in toll operation. Consequently, this condition has resulted in the advent of Nation-Wide Toll Dialing. The Nation-Wide Toll Dialing plan provides for satisfactory over-all service between any two telephones in this country and Canada, as many calls as possible being dialed directly by subscribers (Direct Distance Dialing) and as many as possible of the remainder being dialed by operators (Operator Distance Dialing).

It is important to realize that the only type of call which can be handled on a DDD basis at the present time is a sent-paid, station-to-station call, which includes the largest segment of present toll traffic. It must be possible to extend this call from start to finish under the control of the calling subscriber's dial. In other words, both the calling and the called parties must be served by a dial central office and all inter-connecting equipment must be automatic in operation. Collect calls, person-to-person calls, paystation calls, calls to manually operated exchanges, and calls on which time and charge reports are requested must be handled by operators, as they are now.

I am sure that there is not a telephone representative today that does not know these facts. We point them out, however, in order to direct your thoughts to some of the problems that the commercial people are going to be confronted with whenever Direct Dis-

*(Continued on page 155)*

# Report of USITA Engineering Committee

By P. H. HENSON, *Chairman*

THIS is a report of the USITA Engineering Committee on its 1958-1959 association year activities. With some degree of pride, we can point to participation in a number of worthwhile undertakings, certain of which can be recorded as accomplishments of note. We also trust that plans which have been formulated and implemented will later lead to significant contributions. With this self-imposed pat on the back, we can now report specific activities of the general committee and the five sub-committees.

(1) *General Committee.* The general committee has again occupied this association year by considering and acting on general engineering problems and attempting to keep abreast of the activities of the sub-committees. Last year we tried to stay ahead—this year we were content to stay abreast. The general engineering problems were concerned largely with the evaluation of new products and equipment. Several manufacturers sought advice on products and procedures under development. In keeping with association policy, the principle of operation or design was evaluated and not the end product itself.

On June 23 and 24, 1959, a meeting of the general committee, together with representatives from the plant committee and engineering sub-committees, was held with Bell System personnel to discuss and evaluate procedures and equipments that will require industry wide coordination in the near future. As a result of these meetings, the committee is now preparing for distribution to member companies a series of bulletins on various technical subjects. Those bulletins already issued or now being readied for distribution cover such subjects as (1) Dataphone Service and Facilities; (2) Buried Cable Distribution; (3) PBX Inward and Outward Toll Dialing; (4) Transmission Maintenance; (5) Microwave Radio; (6) Closed Circuit TV, and (7) Numbering Plan Area Codes, Credit Card and Special Charge Calls Handled on a DDD basis.

It is the consensus of your committee that if the distribution of such bulletins can be perpetuated, we will have developed an excellent means of alerting member companies to operational future planning that will require industry-wide coordination.

The Engineering Committee also participated in the preparation of the Joint Report on Mark-Sensing Toll Tickets that was distributed to member companies in May. Aside from these specific projects, other committee activities are reflected in the following Sub-committee reports.

(2) *Subcommittee on Radio and Carrier.* This sub-committee has been active, as usual, in connection with Federal Communications Commission matters. Specifically the subcommittee (1) has participated in hearings and determinations on the frequency band above 890 MC; (2) has done similarly on the fact-findings hearings for the 25-890 MC band; (3) has handled a number of relatively minor FCC actions or proposed actions, and (4) is presently well under way on a dial mobile radio study leading toward the objective of compatability between the systems of various manufacturers. This objective will be realized through the preparation of minimum performance standards for the guidance of both telephone company purchasers and manufacturers.

**The address entitled "Chickens and Eggs" presented at the USITA Convention Engineering Conference will be published in a forthcoming issue.**

The FCC statutory inquiry concerning allocations above 890 MC was initiated during the reign of the former sub-committee chairman, Marcus L. Donaldson. Since the inital USITA presentation, the sub-committee has participated in the preparation of the follow-up briefs and petitions. The sub-committee, and particularly Chairman Ross H. Herrick, has assisted in the preparation of an association presentation to FCC regarding provisions for the 900 MC services displaced in favor of military radio-location services.

The sub-committee, together with Thomas R. Warner, USITA radio engineer, and the association legal counsel, presented the USITA position to the FCC in its statutory inquiry concerning frequencies in the 25-890 MC band. Efforts in this hearing were directed primarily toward the procurement of suitable provisions in the 840-890 MC band for microwave point-to-point service. A further effort in this hearing was concerned with land, mobile radio, with emphasis on the need for suitable common carrier provisions.

The dial mobile radio study now in process started with a meeting on Aug. 11 and 12, 1959 in Lorain, O. A second step was taken at a meeting held in Washington, D. C., on Sept. 15 and 16, 1959. The meetings served to develop a list of firm system requirements based on the performance features requested by the operating telephone companies that were found to be within the limitations of practicality and economy for the manufacturers.

Later, the sub-committee will develop minimum performance standards for

*(Continued on page 62)*

# Raytheon . .

**RAYTHEON's 200-AMP BATTERY CHARGER** is just one of the new Rectichargers introduced at the 1959 U. S. I. T. A. convention in Chicago. If you did not pick up the facts at the show, you can get them by writing Raytheon, Manchester, N. H.

## POWER SUPPLIES

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# .....in the power field with new equipment

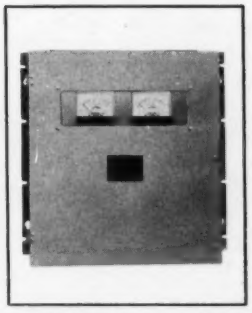
CHICAGO, 1959—Raytheon answers the power supply needs of a rapidly growing telephone industry by expanding its 50- and 130-volt battery charger lines.

This new power equipment utilizes Raytheon-developed and thoroughly tested silicon-rectifier circuitry that offers greater reliability with less maintenance.

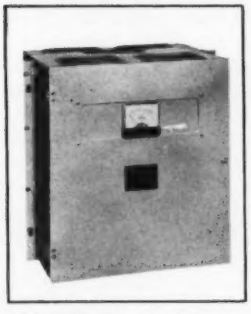
These new, highly efficient Rectichargers are up to 50% smaller than comparable selenium models—saving valuable floor and rack space.

For literature on these new units or for help with any of your battery charger or battery eliminator requirements, simply write Raytheon Company, Manchester, New Hampshire.

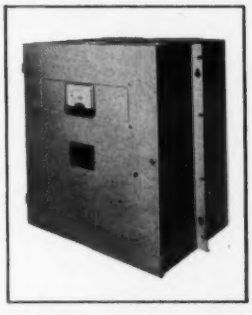
**RC-50K200:** 200-ampere, silicon battery charger is added to Raytheon's 50-volt Recticharger line. This unit is 46 inches high by 30 inches wide by 29 inches deep—less than half the size of its selenium counterpart.



**RC-140A3:** This new 3-ampere, 66-cell charger was designed for 130-140 volt power-board applications. Companion 6- and 12-ampere units, silicon CEMF cells and control panels give Raytheon a complete power panel line.



**RC-50A9:** This new 9-ampere rating provides reserve capacity for growing exchanges. RC-50A9 adapts to 19, 23 or 30-inch mounting and occupies only 15 inches of vertical rack space.



**RC-50A18:** Another intermediate charger rating to meet a recognized power requirement for large PBX's and medium-sized CDO's. This 18-ampere silicon charger is only 20 inches high.

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dial mobile radio systems based on the conclusions of both operating companies and suppliers. It is anticipated that the sub-committee will later pursue the determination of standards for microwave radio, carrier systems and auxiliary testing equipment.

(3) *Subcommittee on Direct Distance Dialing (DDD).* A meeting of this sub-committee with Bell System representatives, on Sept. 15 and 16, 1959 was the only formal meeting held during the association year. The agenda for this meeting was compiled to cover subjects which required clarification and to invite the disclosure of plans which may affect overall toll dialing operations.

The meeting further provided an opportunity to review the revisions being incorporated in a new issue of the "Notes on Distance Dialing." Typical of the agenda items discussed are the following subjects:

(a) Numbering plans of the future.
(b) Transmission objectives.
(c) Direct Distance Dialing of person-to-person, collect and special calls.
(d) Access codes.
(e) Protection of office codes in contiguous number plan areas.
(f) Office balance.
(g) PABX inward and outward dialing.
(h) Alternate routing problems.
(i) Supervision and pulsing requirements.

The minutes of this meeting will be made available to member companies in the near future. Further, at such time as the new issue of "Notes on Direct Distance Dialing" is readied for distribution, same will be made available to those who require the information in planning for adequate toll service.

The sub-committee considers such joint meetings to be a valuable contribution to the success of DDD and firmly believes that the industry will profit by a periodic exchange of views. DDD is in the process of evolution and new developments which will affect the quality and economy of the service will continue to present technical problems of mutual interest. For optimum results, it is necessary to continue to coordinate the procedures and technical aspects of this important phase of telephony.

## Safety Thumb Tacks

**By John A. Bracken**

**Bits of safety reasoning, either pointed or flat, depending upon the way you look at them.**

**"Start today planning for tomorrow's *Safety*."**

•

**"Sow carelessness, reap accidents."**

•

**"No one expects to have an accident, everyone hopes not to have one."**

•

**"Take necessary steps to remove the potential cause of foreseeable accidents."**

•

**"Cross intersections cautiously, learn to live by learning to look."**

**Left to right: Dick Post of Brownwood, Tex.; Henk Bartelink and Bill Wilkens, both of Concord, N. H.**

**Left to right: Richard Friehe of Chicago; D. S. Seitz of York, Pa.; Gene Tuel of Raytown, Mo., and Hugh Skidmore of Chicago.**

(4) *Subcommittee on Engineering Education.* This sub-committee arranged for the third annual Telephone Engineering Conference at Michigan State University, East Lansing, Mich. A total of 45 men registered—the largest class to date. The Conference was held from June 28 to July 17.

The 1959 program varied from previous programs in that the accounting course was dropped and the over-all course was shortened from four to three weeks. Questionnaires from the previous two conferences had indicated that accounting was of little value to this group, and shortening the program enabled the university to hold the registration fee to $500. . . .

The experience gained in conducting these conferences has resulted in improvements each year. We are of the

opinion that this is definitely a worthwhile activity and should be continued.

(5) *Sub-committee on Transmission and Protection.* The sub-committee's primary effort has been directed towards the formation and implementation of additional state level transmission and communication improvement committees. This is a continuation of the program initiated in 1958. Early this year a memorandum was sent out by the (USITA) Washington office to all state association secretaries. This memorandum pointed out that the USITA board of directors had adopted the recommendation of the Engineering Committee that state associations be urged to set up committees, particularly in view of the growing need for joint action in connection with Direct Distance Dialing, SAGE Program, and other present and contemplated nationwide government, military, and civilian networks, and Dataphone service.

Ten state associations have appointed either a committee or a chairman to be responsible for this activity. . . .

Following this action the committee prepared the first in a series of information memoranda. This first memorandum explained the objectives of the state committees and suggested that each name the committee the Independent Transmission and Communication Improvement Committee (TCI). The memorandum also suggested a procedure for initiating the functioning of the committee and a committee program which included the assembling of information on, developing coordinated plans, and securing proper transmission in connection with the following:

Code assignments and DDD arrangements.
Intertoll trunks.
Toll connected trunks.
EAS and inter-office trunks.
Subscriber loops.

In the memorandum it was also suggested to the state committee that they request the Bell state manager to appoint a Bell TCI committee to work with the Independent committee which has been designated.

This memorandum was developed in cooperation with the advisory staff of the American Telephone & Telegraph Co. The memorandum was distributed from the office in Washington to all state association secretaries and Independent TCI committees, and to all associated Bell companies by the American company.

The committee is continuing to work with the pilot Independent TCI committee in South Carolina in developing information and suggested projects which will be made available through subsequent information memoranda.

It is felt that these TCI committees can furnish the opportunity to develop the needed cooperation and coordination between the Independents and the Bell System, and between Independents. Such coordination is becoming essential in furnishing a modern, progressive nationwide telephone system. This committee is continuing to encourage those states which have not set up committees to do so, and to furnish the inspiration for the committees which are appointed to realize the opportunity and obligation which exists for them to make a substantial contribution to the orderly development of such an essential service in the nation.

**Left to right: W. H. Brady of Creston, Ia.; Ed P. Burney of Lafayette, Ga.; W. B. Harrison of Alfred, N. Y., and V. L. Rhine of Anderson, Mo.**

(6) *Subcommittee on New Techniques and Devices.* This sub-committee has considered several methods of meeting its responsibility to member companies. It has been concluded that major and significant techniques and developments should receive the attention and study of the sub-committee as opposed to minor advances or contributions in the way of improved tools, testing equipment, plant materials and component parts.

In conjunction and cooperation with the general committee, it is anticipated that this sub-committee will assist in the preparation of engineering committee bulletins on certain subject areas. Toward this end, the sub-committee is presently making a preliminary evaluation of the economic and engineering aspects of electronic switching. As this or other subject area investigations are completed, detailed reports will be prepared for distribution to member companies.

From the above reports, it can be seen that the 1958-1959 association year has been a busy one for all serving on the Engineering Committee. We trust that some of the work has been constructive.

It has been an honor and a pleasure to serve the association during the past year. The assistance and cooperation of all concerned is gratefully acknowledged.

**Left to right: Mr. and Mrs. P. M. Ferguson Jr. of Mankato, Minn.; R. H. Stone of Galion, O., and Mrs. George C. Richert of Washington, D. C.**

# Transmission and Communications Improvement

By FRANK S. BARNES JR.*

*(An Engineering Conference Address)*

TWENTY years ago it required over 17 days to complete a commercial flight around the world. Today, it requires less than three days to make the same flight in jet airliners.

Recently, off the coast of Florida, an experiment was conducted in which mail was sent by rocket from a ship in the Atlantic to the mainland.

Last month, Congress levied an additional one cent gasoline tax to assure the continuation of the mammoth interstate highway program which will provide this country with a highway system permitting private transportation possibilities undreamed of 20 years ago.

In all these developments we find speed, reliability, and quality as essential ingredients of the progress being made. These examples emphasize the continual advances in the art of transportation—results of the constant search for more efficient and better ways of getting things done.

The communications industry has also made tremendous progress in the art of transportation—transportation of the human voice from one point to another. As the airlines convert to the jet age, the post office explores mail service by rocket, and as super-highways crisscrossing the nation become a reality, we in the communications field are entering the "Via Net Loss" or VNL age of transmission. There has been very little publicity on this phase of "Nationwide Dialing," but it is as important a development to the country as the developments which were mentioned earlier.

This plan — "Via Net Loss" — for standardizing transmission on toll circuits is making it possible for us to provide our customers with faster, more reliable and higher quality long distance service resulting in greater usage of this service by the customer. Shortly after operator toll dialing was available at one exchange, a subscriber remarked that the service was so fast on a long distance call he had made that he was not prepared to talk when his call went through. It was necessary for him to ask the called party to wait until he could compose his notes. The contrast noted here in the speed of the new service is also present in the reliability and quality of the service, in that transmission is more uniform in volume and freer from the disturbing effects of noise, crosstalk, echo and singing.

These improvements make calling long distance a more pleasant and satisfying experience for our customers, with the result that they use the service more frequently and talk longer.

If "Via Net Loss," or "VNL," is making these improvements possible, just what is this magical potion?

"Via Net Loss" in broad terms is "the minimum loss measured in decibels at which a circuit can be operated—without objectionable noise, crosstalk, singing, or echo — when switched at both ends to other toll circuits." Some of you undoubtedly have had a great deal of experience with "Via Net Loss" circuits and are thoroughly familiar with the proposed nationwide dialing plan and the toll circuit requirements. However, for the benefit of those who may be operating smaller companies and who are not yet on "Via Net Loss" operation, let us review briefly this plan.

Assume we want to build a telephone system including a toll network which will permit a person to talk to any point in the system—to the house next door or the friend across the continent —and have the same volume and quality of transmission on all of his calls. How would we go about it? One method would be to build a complete four-wire system, including local loops and switching in local and toll offices. This would permit two separate circuits from the caller's transmitter to the called party's receiver on one circuit and the reverse on the other. In addition all circuits would be made to operate at no loss or 0 decibels, so that regardless of the number of circuits required in the connection the circuit would still operate at no loss. This would accomplish our objective.

Of course, we do not have such a system or one nearly approximating such a system, since all of our local loops and many of our toll circuits are two-wire. On two-wire operation we cannot obtain a 0 decibel —or no loss—circuit simply by boosting the volume with an ordinary amplifier. The tubes and transistors we rely upon to provide this boost will amplify in one direction only. We have to play tricks on them to secure the two-way amplification essential for a telephone circuit. These tricks give us telephone repeaters but also cause echo; and singing results if the echo is high enough for the circuit to oscillate. We are, therefore, limited in the amount of amplification we can use when a two-wire circuit is involved.

Let us examine further, then, the effect of echo on the transmission level at which we can operate our toll lines. At a given over-all toll circuit loss, echo disturbance is primarily dependent on two factors: (1) How fast sound travels over the circuit; and (2) the extent of echo producing irregularities.

Sound traveling through the air is

*Mr. Barnes is Chief Engineer of the Rock Hill (S. C.) Telephone Co.

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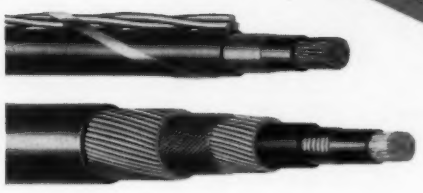
# SUPERIOR CABLES



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at times reflected back to the talker as echo from a mountain, building, canyon, or some other obstruction. Similarily electrical currents are reflected back along a circuit to the originating end by electrical irregularities. Examples are the irregularities at the junction of dissimilar facilities, such as a junction of cable and open wire, or the irregularity at a repeater hybrid.

These reflected electrical currents are factors to be considered on direct or built-up connections of 25 miles or more, and become increasingly difficult to overcome as the distance is increased. Echo is disturbing to the talker and this disturbance is greater as the delay in the return of the echo to the talker is increased, or as the volume is increased. Echo causes the caller to lower his voice in an effort to eliminate the distraction and poorer transmission to the listener results. Subscribers will tolerate louder echo if the delay is short than if it is long and begins to overlap the next syllable.

All present telephone facilities have some electrical irregularities which will produce echo. Since the time delay in the return of echo in a large measure determines the permissible volume of the echo, the echo volume which can be permitted will depend on the speed at which the sound travels and the length of the facility. Since volume is proportional to loss, the velocity of propagation (or speed) in the circuit and circuit length are elements to be considered when determining the minimum loss at which a circuit can be operated. Factors have been developed from the velocity of propagation for the various circuit facilities which, multiplied by the length of the circuit, will give the minimum loss at which the circuit can be operated and switched in the nationwide plan. This factor is called the "Via Net Loss Factor" and is expressed in decibels per mile. The decibels obtained by multiplying the length of circuit by this factor (plus 0.4 decibels as an allowance for variations), is the "Via Net Loss" of the circuit. To give you an indication of the different "Via Net Loss Factors" in various types of facilities, the "Via Net Loss Factors" for three types are as follows:

| | *dbs. per mile* |
|---|---|
| H88 loaded exchange cable of any gauge (two-wire) ..... | .04 |
| Open wire at voice frequency (two-wire) ..... | .01 |
| Open wire carrier ..... | .0017 |

Now that we have reviewed VNL let's examine how it is used. Referring to *Chart 1* you will notice that there are four classes of toll switching centers—Class 1, the Regional Center;

**Left to right: K. L. Lawson of Lincoln, Neb.; Mrs. Hershel Flater of Wilton Junction, Ia.; H. D. Straughn of Oklahoma City, Okla.; Mr. Flater; Mrs. Paul Maurer of Wilton Junction, and Mr. Maurer.**

Class 2, the Sectional Center; Class 3, the Primary Center; and Class 4, the Toll Center. These toll switching centers are connected together by toll lines or "Intertoll Trunks." For the moment, let us disregard the Class 5, or End Office, since in the nationwide dialing plan it is not contemplated that toll switching will be performed in any of these offices.

You will note that the plan provides that there may be "Intertoll Trunks" between any toll switching office and that these trunks will operate at a "Via Net Loss" of not less than 0.4 decibels—and varying in the maximum loss permissible between 1.5 and 4.5 decibels, with the one exception that intertoll circuits between Regional Centers are operated at 0.5 db. The resulting transmission loss between any two Class 4 toll centers through the maximum amount of switching will not exceed 14.5 decibels.

It should be kept in mind that this is the limit with the maximum amount of switching. The major portion of our toll traffic, however, will not be routed over such an arrangement, but will use a combination of final and high usage trunks. High usage trunk routes will be established from any toll switching center to another when justified by the amount of traffic, but will not be designed traffic-wise as liberally in quantity as those in the final route. The final routes are designed to carry the overflow from high usages routes.

Since all of this switching is being done mechanically, it becomes increasingly important that these circuits be designed and maintained within the limits of the nationwide dialing plan. The need for this becomes apparent when we realize that the operator at the toll board on most station-to-station calls does not talk or listen in on a connection. Instead, she watches her lamp supervision. The operator, therefore, on station-to-station calls does not necessarily talk over the connection, and loses the opportunity to determine when transmission is unsatisfactory. In this situation the operator is not aware of difficulties in advance of a customer complaint.

In addition to these developments the intertoll machines select the first idle trunk in a routing pattern regardless of the suitability of the trunk transmission-wise. Formerly, in a large number of cases, the operator was able to avoid certain trunks or connections which experience had taught her were unsatisfactory, and there were many times when she could identify the trunk for testboard action.

When Direct Distance Dialing by the customer is involved it is even more difficult to pinpoint transmission difficulties since an operator is not involved in the connection. In cases where multiple lines are not available, the customer cannot report an unsatisfactory transmission condition without releasing the connection.

As the nationwide dialing plan is studied, and we gain more experience with it, there comes a greater realization that the communication system in this country is evolving from local telephone systems, joined together by long distance lines, into a nationwide telephone network which must be carefully planned, carefully coordinated and carefully maintained, if we are to furnish the kind of telephone service which the public is becoming accustomed to and expects. The fundamental plan is available. Our objective now should be to meet the standards of this plan as rapidly as our technology develops and thereby provide speed, reliability and quality in *every part* of this nationwide telephone system.

In meeting the standards of this

plan in our own area, we will be concerned with transmission on different types of facilities which can be divided into four categories. They are:

Intertoll trunks.
Toll connecting trunks (or end links).
Local loops.
Extended area service and interoffice trunks.

The fourth category, although not switched into the toll network, is nevertheless important as it has a part in determining the over-all quality of communications which is furnished the subscriber.

As was pointed out earlier, the "Intertoll Trunk" is that portion of the toll plant which connects toll switching centers of any of the four classes. These circuits are planned to operate at "Via Net Loss", the limits of which are determined by the class of switching centers connected by the facility.

Earlier, it was stated that "Via Net Loss" is the minimum loss measured in decibels at which a circuit can be operated—without objectionable noise, crosstalk, singing or echo — when switched at both ends to other toll circuits. When a circuit is operated at "Via Net Loss" it should also be designed and maintained to be free of noise and crosstalk. This "quality control" of toll circuits is made easier by the increasing use of all types of carrier, which is a four-wire facility with built-in regulation and gain control. Because of these features, it is easier to obtain and maintain proper transmission levels with carrier than it is with two-wire physical circuits. As new circuit facilities are being planned, careful consideration should be given to the use of carrier. Practically all intertoll trunks connecting Class 1, 2 and 3 offices are now on four-wire operation and use carrier. The limited application of physical circuits on "Intertoll Trunks" is apparent when it is observed that a two-wire loaded cable circuit of 100 miles must be operated at a "Via Net Loss" around 3.5 decibels, whereas, an open wire carrier circuit of the same length can be operated at a loss of only 0.6 decibels.

The second category is the "Toll Connecting Trunk," or "End Link." The "Toll Connecting Trunk" connects the End Office to the Intertoll Network. As you will recall, it was stated earlier that "Via Net Loss" is the minimum loss at which a circuit should be operated when switched at both ends to other toll circuits. Referring to *Chart 1*, you will see that the "Toll Connecting Trunk" or "End Link" is always terminated on one end in a

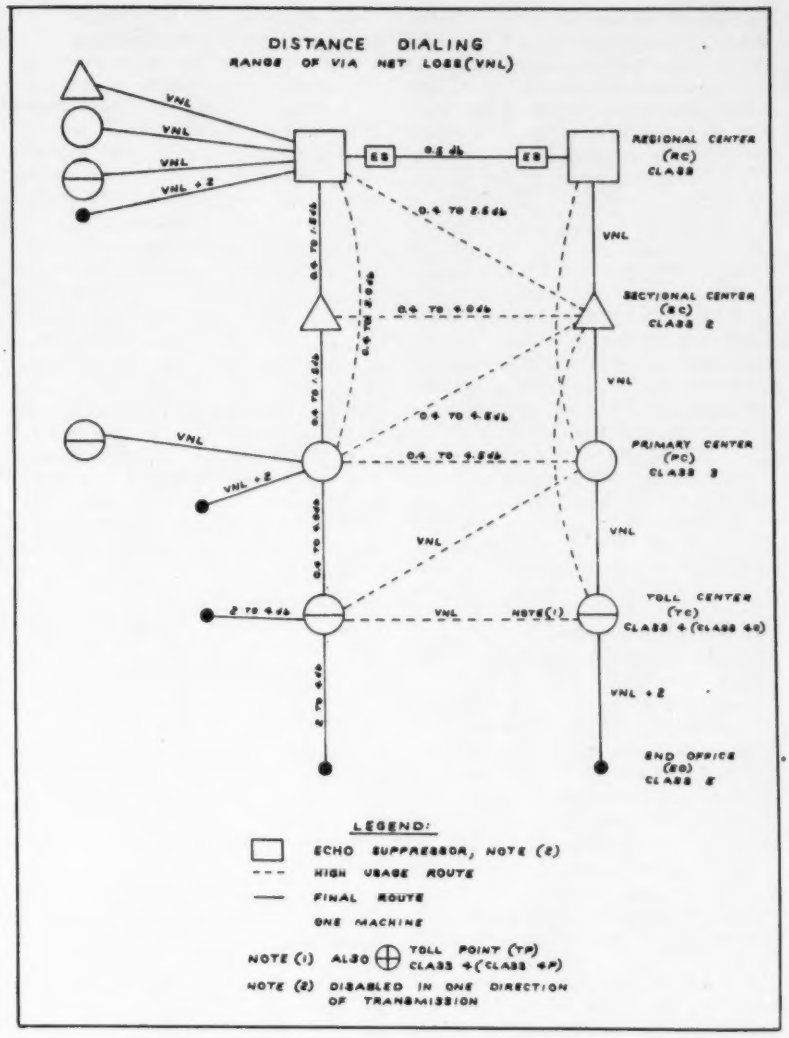



**CHART I**

Class 5 or End Office, which is the local office. From this observation, and from the previous statement, it is apparent that "Toll Connecting Trunks" cannot be operated at "Via Net Loss."

At toll switching points arranged for switching "Via Net Loss" trunks, care is taken to avoid echo producing irregularities. This is not possible at the Class 5 office because the toll trunk is successively connected to local loops of widely different circuit characteristics. Because of this fact, it is necessary to insert loss to control the echo volume. It has been found that when a circuit is terminated at both ends in a local loop, the addition of 4.0 decibels to the "Via Net Loss" will effectively control echo on any length of trunk. Since every toll connection includes two "Toll Connecting Trunks" these trunks must be operated then at a minimum of "Via Net Loss" +2.0 decibels to avoid the possibility of connections which will have objectionable echo.

In order to clearly understand the relationship between "toll switching centers" and "end offices," equipment which switches local loops should be considered as a Class 5 office, even though it may be in the same building with a toll office and may even be a part of the same equipment. In the latter case, the circuits from the toll switches to the local switches then become "Toll Connecting Trunks" or "End Links" and must contribute 2 decibels of loss to the toll connection. If it is not possible to adjust this loss into the circuit facility itself, then a 2-decibel pad must be cut into the circuit on either a fixed or a switched basis.

The third category is the "Local Loop." Proper design and use of these facilities is as important in furnish-

ing good consistent toll service as that of the "Intertoll Trunk" and the "Toll Connecting Trunk," but has not received as much attention. Some of our Independent companies are concerned with "Intertoll Trunks." A much larger number are involved in furnishing "Toll Connecting Trunks," but all are involved in furnishing "Local Loops."

How can we determine what is proper transmission for a local loop? On "Intertoll Trunks" and "Toll Connecting Trunks" we can measure the 1,000-cycle loss with regular test gear. When these circuits are connected, we can determine the over-all loss of the connection by adding these values together. But, because of the varying efficiency of telephone sets over the different circuit facilities, we cannot combine the 1,000-cycle loss of the loop, a standard gain for the set, and the toll line loss to determine the over-all transmission of the circuit. The present method of computing the transmission of a local loop is by the use of tables or curves which have been developed to give the "*Effective Transmission*" of a local loop with a particular instrument. The values from these tables, or curves, represent an average of the transmitter and receiver gains and are referred to as T+R/2 values. There are different curves and tables for different types of telephone instruments. Local loops should be no worse than —3 T+R/2 db. and no better than —9 T+R/2 db.

There is now under development electro-acoustical equipment which will actually measure the true gain or loss of a subscriber loop including the telephone instrument. When available it will be possible to add these values directly to the trunk loss for the determination of an over-all objective transmission rating.

It can be seen that to design local plant, using the curves and tables, would require considerable technical knowledge and for general use a simpler formula is needed—One is available and is called "Resistance Design."

"Resistance Design" is applied by the use of simple guides, as follows:

(1) Select the most economical gauge or combination of gauges permitted by the conductor resistance range of signaling in the central office.

(2) Use the newer high gain type sets where needed, which is generally justified on cable loops of over 10,000 feet.

(3) Apply proper loading to cable and "B" wire portions of all loops which extend beyond a selected distance, usually about 18,000 feet.

(4) Limit the length of bridged cable in total to about 6,000 feet.

A valuable tool for use in selecting distribution cable gauges, which has been developed by one company in keeping with the resistance design, is a gauge zone map for each exchange. This map was developed by outlining on a road map the maximum distance from the central office that 26, 24, and 22-gauge cable could be used on each route, including all its branch routes leaving the central office. The gauge limits are shown at the distance where the resistance of that gauge conductor exceeds the office signaling limit.

This map is used to select the distribution cable and "B" wire gauges applicable to that area by persons planning line extensions. For example, if a line is being planned in an area between the 24-gauge limit and the 22-gauge limit, 22-gauge cable, or "B" wire, would be used, provided the line will not, in the foreseeable future, extend beyond the 22-gauge limit. However, if it might possibly extend beyond the 22-gauge limit, consideration must be given to the use of 19-gauge.

Feeder cable design is somewhat more involved and requires a detailed study of the gauge required to keep all the distribution cables which will work out of it within the resistance limit of the office.

The use of this tool, together with proper control over the use of high gain sets on loops of over 10,000 feet, should go a long way toward assuring good local loop performance at maximum economy.

The fourth category of facility is the "Interoffice or Extended Area Service Trunk." Although these trunks are not switched in the toll network, good overall transmission requires that they be designed to operate within reasonable limits. Most of these circuits will operate in a terminal condition on both ends, but in some cases they may be tandem switched through an office. As a general rule, these circuits should have a maximum loss between offices of not more than 4 to 6 decibels.

The foundation of the nationwide toll switching plan is pretty well completed. The big task now before the industry is that of improving the quality of the facilities below the Class 3 office rather than that of the facilities between the Class 1, 2 and 3 offices. These are the "Intertoll Trunks" from Class 4 offices, the "Toll Connecting Trunks" and the "Local Loops." A large part of this task falls to the Independents. This becomes more apparent when we take note that all Independent companies are providing some portion of these facilities. The full benefits of "Via Net Loss" operation cannot be realized until a substantial portion of the Independents, as well as the Bell facilities in these categories, reasonably meet the transmission standards outlined.

During 1958, it was brought to the attention of the USITA Engineering Committee that there was insufficient interest or understanding by the Independent companies all over the country as to the need and importance of present transmission requirements of the nationwide toll dialing plan. Furthermore, what planning was being done was without the benefit of information of what other companies were planning or should be planning. Many of the smaller companies did not understand the plan, and were reluctant to provide facilities because of a feeling of inadequacy to cope with the technical requirements.

This information was given considerable study by the Engineering Committee and the Sub-committee on Transmission and Protection. These committees came to the conclusion that adequate information relating to transmission requirements and how to meet them was already available. They felt that the real need was for some way to familiarize all Independent companies with the program and their part in it, and to help them with their planning. This would, of course, for an effective job, require a review of each company's facilities and the progress being made to conform to the standards. It would have been an almost impossible task for this to have been accomplished directly by the USITA Sub-committee on Transmission and Protection, because of limited personnel and the need for coordinated planning in the field with other Independents and the Bell companies. Later it was recommended to and approved by the USITA directors that the state associations be asked by USITA to form committees to undertake this important task. The advisory staff of the American Telephone & Telegraph Company also thought well of this plan and agreed to recommend to associated Bell companies that they join in this effort.

In the fall of last year a pilot committee was set up by the South Carolina Independent Telephone Association to work with the USITA Engineering sub-committee to develop a program which could be used as a guide for other state associations willing to join in this effort. At the same time that the five-man pilot Independent committee was set up in South Carolina, Southern Bell set up a three-man Bell committee to work with it. These two committees met jointly, reached agreement on a name, and set up ground rules. They decided to call the committees the Independent and the Bell Transmission and Communications Improvement Committee and

*(Continued on page 156)*

# Independents Gain $12,000,000 In Toll Settlements with Bell

FOLLOWING MANY months of work by the Toll Compensation and Settlements Committee (and its subcommittees) of the United States Independent Telephone Association, it was announced at the USITA Convention that the association had reached an agreement with Bell System representatives for an annual increase of approximately 12 million dollars in message toll compensation based on estimated 1959 overall toll traffic volumes.

A joint report recommending adoption of the revised schedules has been sent to USITA member companies.

Because of the number of Independent companies that are on a special study basis, the adjustment actually will mean about 8 million to 9 million dollars in added annual settlements for companies using average cents-per-message schedules. The new schedules are to become effective during October. This is with the understanding that the industry will proceed with an exploratory study of automatic toll ticketing and a study of the line haul situation, USITA pointed out.

At the same time, joint reports are being released by the committee and Bell representatives recommending revised settlement arrangements for full and short-period private line services and for foreign exchange service. Copies of the joint reports have been distributed to Independent companies. The additional compensation that will accrue to Independents from the application of the revised schedules is expected to total somewhere between $500,000 and $750,000 annually, according to USITA. This is in addition to the increase in settlements for message toll.

The total sum going to Independents in 1958 for settlements on interchanged message toll business was approximately 204 million dollars. Taking into account the increase in toll messages and the revised schedules, the total amount accruing to Independent companies during the coming year should be very substantially increased, USITA stated.

## N. Y. Company Reorganizes Engineering Department

The Rochester (N. Y.) Telephone Corp. has announced the reorganization of its engineering department, plans for expanding the department personnel by more than 10 per cent to keep pace with an accelerated construction program, and the establishment of a suburban engineering office in Geneseo.

According to chief engineer, William A. Pitbladdo, the realignment of duties is designed to correspond with a recent reorganization of the company's plant department.

The engineering department is responsible for planning and designing line and cable routes, manual and dial equipment, and new facilities. The plant department is responsible for the actual construction, installation and maintenance of such facilities.

The expansion of the engineering department will come about through transfer of personnel within the company to meet the needs of a larger construction program planned for next year. The company says that more than 10 million dollars will be spent this year for new construction purposes.

The establishment of a suburban engineering office in Geneseo is "to provide closer liaison between engineering and plant field organizations, and (it) will be staffed by about nine people."

Named outside plant engineer is Clarence Marble, formerly plant engineer. He will supervise four engineering managers and be responsible for planning and design of all outside facilities.

Richard V. Walrath will retain the title of equipment engineer and will be responsible for the engineering of all company equipment.

G. William Miller, formerly special studies engineer, has been named to the new post of property records engineer. He will be responsible for the maintenance of detailed records on all company property.

Joseph A. Hill, formerly district traffic engineer—city, has been named traffic engineer and will be responsible for the planning and design of all switchboard and dial switching facilities.

Donald F. Brelos, formerly administration engineer, has been appointed staff administration engineer. He will be responsible for coordination of scheduling activities and supervision of the office staff of the department, and will develop planning functions and other staff operations.

In announcing the organization changes, Mr. Pitbladdo stated that "the reorganization of this group, together with the rearrangement of geographical responsibilities, will expedite the processing and completion of orders, and provide more efficient development of plant facilities ample to meet the growing needs of the area served by the company."

**Studying the plans for the reorganization of the Rochester (N. Y.) Telephone Corp.'s engineering department are seated, left to right, R. V. Walrath, equipment engineer, W. A. Pitbladdo, chief engineer, and Clarence Marble, outside plant engineer. Standing are G. W. Miller, property records engineer, D. F. Brelos, staff administrative engineer, and J. A. Hill, traffic engineer.**

# Communications for North American Air Defense

By COL. HOWARD S. GEE*

*(An Engineering Conference Address)*

SIX THOUSAND years ago man gazed fearfully at the skies and saw little more than the terrifying powers of the unknown.

Today, man may gaze upward proudly and confidently at suns and moons and planets which he had analyzed, and even weighed with considerable precision. He can also see starlike bodies which he himself has hurled into the heavens. Yet the greatest challenge in all his history is ahead of him—but not far away—flight into terrestrial and interplanetary space.

The scientific progress which we have experienced since the beginning of recorded history is indeed amazing —even more amazing is the rate at which it has occurred during recent years.

If we could imagine a clock so geared that it takes 6,000 years for one revolution of the minute hand, then the clock I have in mind would depict our relative progress. For instance, about 50 minutes ago the Great Pyramids were under construction; 20 minutes ago Caesar was in power; only five minutes ago Columbus announced his discovery of America; and less than one minute ago Faraday produced the first dynamo.

Look at the advancement which has taken place in the last 60 seconds. Without naming them all, we can point to radio as coming into being about 40 seconds ago. The first hydrogen bomb explosion occurred within the past five seconds. And, today, we stand on the threshold of space flight.

Now, let's get back to sidereal time and review what has actually happened within the past few years; and that which is predicted for the future with respect to communication-electronics and National Defense.

There has been an almost unbelievable advancement in the military importance of electronics. Twenty-five years ago the military application of electron-tube devices was limited mainly to radio communications. Today, electronics controls the effectiveness of every offensive and defensive weapon that our armed forces use.

Reviewing the technical history of military electronics reveals that this rapid expansion was not so much the result of a single technological breakthrough as it was the systematic application of a great many advances in electronic components, circuit techniques and engineering methods.

In selecting some of the individual developments that exerted the greatest influence on the advancement of military electronics, one would certainly include the magnetron, the shock resistant subminiature tube, semiconductor devices, subminiature equipment construction, the fundamental logic of the digital computer, the discovery of tropospheric and ionospheric propagation.

One would easily predict that some pretty fantastic military uses of electronics in the next 25 years will influence our military weapons and concepts of warfare to a still greater extent than before.

Some technical experts seriously predict that within five years the application of microcircuitry technology—"molecular electronics" as some prefer to call it—will permit packaging in a 3-inch cube an entire computer having the capacity of a million words and with no detachable components.

Computers of many types will find new uses in military operations. Coupled with new worldwide, high speed communications circuits, computers yet to be developed will analyze massive amounts of technical data under several different action conditions in a matter of microseconds. With this kind of background, a commander will be able to determine the optimum course of action under known circumstances.

Many authorities believe that the future of communications is closely linked with outer space and that we will open new channels that will again expand our communications band width. The civilian applications of these gains will be as significant as the military. We may soon be communicating around the world by means of radio signals relayed by the passive or active repeater type earth satellites. The space age may make it possible to span the oceans with live television programs and for generals to watch a battlefield half way around the globe. Signals may be relayed across the ocean by reflection from passive satellites — giant spheres, high above the surface of the earth or great flat mirrors oriented to reflect ultra short waves back to earth. Alternatively, messages may be relayed from active radio repeater stations similar in principle to those used to transmit signals across continents, but elevated into satellite orbit so that one repeater can serve where it now takes dozens to cover a few thousands of miles.

The possibilities are legion. The problems are also legion, so it is only fair to ask just where we stand today and which of the many possible systems look most practical for present-day technology. One of the disagreeable features of repeaters at a few thousand miles altitude is the fact that

*Colonel Gee is Chief, Communications Systems Division, Air Defense Command, Colorado Springs, Colo.

they must be acquired and tracked as they streak rapidly across the sky, and the very large ground antennas must be capable of switching rapidly from satellite to satellite to maintain a continuous circuit.

A most exciting prospect, therefore is the possibility of the 24-hour repeater which remains stationary in the sky. With such a satellite, stationary ground antennas can be used and only three satellite relay stations are required to serve most of the world. Establishing such a repeater station will be a scientific achievement of very high order, and yet the time when it can be accomplished may not be many years away.

At first, 24-hour repeaters will probably be of low power and useful only for point-to-point communications between very large ground stations. Eventually, as space becomes more fully conquered, one can imagine very powerful repeaters with large antennas capable of interconnecting multitudes of small mobile and fixed ground stations. The impact of such a facility upon tactical warfare can scarcely be imagined.

By use of small directional antennas which can be pointed to a known part of the sky, it will be possible for aircraft, submarine or mobile troops to communicate with headquarters through the satellite repeater. It may be that the most important part of future warfare will be the maintenance and defense of such satellite repeater stations.

Intermediate (1,000 or so miles) altitude repeaters providing transoceanic communications between large satellite tracking communication terminals which are connected to existing telephone and television networks are further away but technically feasible. It very likely will be an accomplished fact within a few years. Whether or not the relays are active or passive depends critically upon the development of long-life satellite components, the relative economics of rocket *vs* ground station cost, and questions of reliability in the presence of man-made interference, both intended and unintended. There are as many well considered opinions as to the outcome as there are possibilities.

Now let us briefly review what has actually happened within the past few years with respect to the electronic ground environment portion of the North American Air Defense System, which is so essential to our survival in the face of air attack. It is here that the telephone industry plays such a vital role.

The early air defense studies were made by some of the nation's most eminent scientists, and the findings of this group resulted in a contract between the Defense Department and Massachusetts Institute of Technology for the establishment of Lincoln Laboratories. This agency was in turn to develop an air defense system which would meet the newly established air defense requirements—largely characterized by speed and positive control. The MIT Whirlwind digital computer formed the core of the new air defense concept. Around this core, the scientists and technicians of Lincoln Labs wove a web which we now know as SAGE, or Semi-Automatic Ground Environment.

**Left to right: F. A. Davis of Lorain, O.; Basil Brady of Buffalo, N. Y.; W. E. Loensing and K. J. Pratt, both of Minneapolis, Minn., and J. Fenton of Winnipeg, Canada.**

The use of computer techniques and related equipment gave not only very great improvements in speed over a manual system of air defense, but greater accuracy, reliability and capacity. With this electronic computer as the focal point for the SAGE system, methods and means were then refined for providing the computer with all the information necessary to the solution of the problem.

Inherent in this Semi-Automatic Ground Environment concept was the conviction that the system could be tied together from a communications standpoint. However, radically new and reliable methods would be needed to convert radar information into a signal form which could be transmitted over Class 2 telephone circuits. Complicated data circuits would be required to pass the all-important computer instructions to the interceptor weapon. Automation was the key word, and I need not remind you of the headaches involved in this process.

The conviction held by the creators of SAGE that a suitable management system could be devised for the impending weapons developments, and be tied together communications-wise, was based on the existence of a network of commercial land lines and radio links that had no counterpart in any other part of the world. Without this, the SAGE concept would not have come into being.

As you know, the first elements of SAGE are now operational and the system is expanding rapidly. However, the one thing which is giving us the most concern at the moment is the vulnerability of the present and future networks to the explosive effects of megaton weapons. Much has been done in this regard but much more remains to be done. Protection of the entire air defense system is our present objective. This includes constructing control and Direction Centers to withstand high over-pressures.

In certain cases, we plan the use of underground facilities. Sites are to be dispersed and their location within the primary industrial target areas must be avoided. All of this will avail us little if communications cannot be maintained between Control Centers and to the information-gathering devices, as well as the defending weapon sites.

The problem of protecting communications links is truly a nightmare. Nevertheless, we can help ourselves considerably through diversification and multiple routing of circuits, bypassing of large cities, and the protection of switching and terminal facilities. Station-to-station cross toll dialing will give us tremendous insurance of these respects when it becomes a complete reality.

The new air defense concept of operation is based upon getting the necessary elements of the system, vital to fighting a war, into a protected or hardened environment. This necessitates the construction of Control Centers in underground installations capable of withstanding high over-pressures. As you all probably realize, the cost per square foot of floor space is a very significant figure as compared with our present "soft" surface type installations.

A recent breakthrough in the state of the art for computers has made proceeding with the implementation of the SAGE Super Combat Centers practicable. This practicability is achieved through the reduction of equipment size, ventilation, power and space requirements for the computer and certain associated components through the application of modules and maximum use of solid state devices, miniaturization techniques, encapsulation techniques and ferro-electric devices to achieve small, highly reliable equipment. The new solid state computer also makes it feasible to collocate the Federal Aeronautics Administration activities to provide a radar system for airways control at an early date.

**Left to right: G. Fred Switzer of Harrisonburg, Va.; Keith W. Vogt of St. Paul, Minn.; Clive W. Haas of Big Timber, Mont.; Lloyd Sherman, and Paul E. Drake, both of Bolivar, Mo., and Orla L. Moody of New York City.**

It has been necessary for us to advise the common carriers and communication equipment manufacturers, in the provision of communications facilities for the SAGE Super Combat Centers, that every reasonable effort should be made to use equipment employing solid state devices and miniaturization techniques for communications equipment which, of necessity, must be located in these centers. It was not considered desirable to establish rigid or unwieldly specifications at this time, but it will be necessary for the Air Defense Command to be critical of the use of vacuum tubes, electromechanical equipment and channelizing equipment having relatively heavy power, ventilation, space and manpower requirements compared with other equipment which can be provided in the time period available.

In addition, to fully optimize this new concept, additional requirements are being imposed on the communications industry. These requirements can best be stated in the form of objectives:

(1) Communications channels provided for the SAGE system will be nominal 4KC channels and standardized for common usage throughout the system. The channels will be used universally for high speed teletype, voice, facsimile, graphics and digital data transmission.

(2) A fully automatic electronic switching system and control system complex. The switching center must provide automatic circuit and message switching capability on a four-wire basis for the reception, switching, relay and storage of all types of communication, utilizing rapid electronic switching techniques. The switching center shall:

(a) Effect positive error control during the receipt, processing and transmission of binary and digital information.

(b) Permit inter-operation of various facilities employing different modulation rates.

(c) Maintain accessible records on a selected basis of all information processed.

(d) Utilize trunks automatically selected through channel switching techniques.

(e) Provide automatic dynamic testing to prevent catastrophic failure.

(f) Terminate channels which incorporate transmission security equipment.

The control system will provide for automatic, instantaneous restoration or rapid expansion of the network by automatic call-up of the civil communication facilities (Direct Distance Dialing network).

(3) An improved digital data communications set capable of conveying synchronous digital data over telephone voice channels of nominal 4KC bandwidth, providing efficient use of frequency spectrum and improved performance in the presence of noise. The data communications set must be capable of working either on private line channels or channels which may be obtained by access to the nationwide direct distance dial network.

(4) Protection of the private line channels must be provided by avoidance routing or hardening of the facilities if they pass through critical target areas including both military and industrial population areas.

I am quite sure that by now you are probably wondering what impact the integration of the Super Combat Centers into the SAGE system is going to have on the communications network which is presently being constructed. In general, you may expect a reduction in the number of channels between installations, with requirements for dual-routed channels being reduced to an absolute minimum. Dual routed channels will be limited to Ground Air Data Link facilities and to weapon installations.

This general reduction of channels is made possible through the use of standardized universal, common user, nominal 4KC channels, coupled with fully automatic switching equipment, which I previously described as an objective. This combination will provide maximum flexibility of the communications network which is not presently available in the existing SAGE network.

Another improvement in the SAGE communications environment is the replacement of Frequency Division Ground Air Data Link facilities with Time Division thereby providing greater message capacity for control of weapons, while greatly reducing the requirement for Ground Air Voice, common user group trunks. Action has already been taken to reduce trunking to five trunks in each of two routes where facilities are to be provided, and the sector is initially scheduled for operation with Time Division Data Link facilities.

Here, again, due to the flexibility to be provided in the communication network through high speed switching, automatic restoration or expansion of the private line network channels through advanced call up of channels in the Direct Distance Dialing network, the need for dual routing Ground Air Force trunks is obviated.

For many years past, it has been a firm policy of the military departments to lease communications services from the commercial telephone companies. Associated Bell, Independents and cooperatives have provided, and will continue to provide, leased circuitry for SAGE, as well as the manual air defense system until it is phased out.

The engineering for these leased facilities is an extremely complex undertaking. Technical standards must be adhered to rigidly. The web of existing communications in a specific local area must constitute an integrated whole,

and we feel that the engineering for the entire system must be carried out by one agency.

It is logical and desirable that this agency should be the AT&T company, inasmuch as all local points must ultimately tie into its long lines. This procedure does include and requires participation of associated Independent and cooperative telephone people. This also includes the manufacturers who make equipment for all concerned.

As engineering for each area is completed, installation and operation of the required facilities must be carried out by the local telephone agencies where SAGE operations are to be conducted. Obviously a great number of telephone companies will be concerned. There are over 600 involved at the moment, and it is difficult to predict what the final number will be. Nevertheless, any company affected by SAGE will have an opportunity to provide the circuits in its area. A waiver in favor of another company can be made only if the franchise holder volunteers such.

While the opportunities to participate are open to all, I sometimes wonder if all concerned fully understand what is really meant by participation. To me, participation means not less than complete cooperation with other involved companies. It means an unrestrained willingness to provide the best service possible. And it means full understanding that no one portion of the SAGE communications network can stand in isolation, but must be a properly engineered and integrated part of the ground environment system which we need so badly.

Having accepted the opportunity to participate, a company must share in the grave responsibility to make the system work efficiently and with the least cost to you and me as taxpayers.

The economic aspects of SAGE are highly significant. Commercial communications now in existence must be utilized to the utmost, if we are to avoid an excessively heavy burden for new construction. Unfortunately, the existing circuits are not entirely satisfactory from a quantitative and qualitative standpoint, and certain additions and improvements will continue to be necessary. However, each addition and improvement must be given careful attention. To assist the personnel concerned with preparation and evaluating engineering proposals, the following guidelines are expounded:

**Left to right: Datus Ensign of Santa Rosa, Cal.; Robert Avey of Dallas, Tex.; Douglas B. Carnes of Chicago; T. Edward Rose of Bermuda; and R. J. Schafer of Pinconning, Mich.**

(1) In providing communications services for SAGE, an Independent or rural cooperative telephone company should utilize to the maximum economic extent existing facilities within the service area, whether such facilities are owned by the Independent or rural cooperative, or by another communications carrier. In addition, the company should, in engineering the required circuits, provide or arrange for the augmentation of such existing facilities by additional channeling equipment to furnish the required number and quality of channels, rather than undertake new construction or other expansion of facilities, unless the latter procedure would involve no greater cost (including contingent cost) to the government.

(2) In taking into account the maximum economic use of facilities, consideration should be given to both recurring and non-recurring charges. Where the nature of the cost to the government is difficult to evaluate, because there are both fixed recurring charges and potential charges for non-recoverable costs, such as contingent termination liabilities, the recurring charges should be given greater, but not exclusive, weight. It would appear advisable, where it cannot be reasonably determined which of several methods of providing the required services would result in the least cost to the government, to give favorable consideration to the Independent or rural cooperative company which is servicing the area in question, either under franchise, agreement or as a matter of past practice in view of the legislative history of Public Law 968.

(3) If a communication carrier refuses to offer the most economic means of providing the service (for example, by insisting at government expense to expand its own facilities where facilities of another company to which the carrier can connect are available for use or may more economically be made available for use) orders should be placed with each of the communications carriers affected so as to obtain the required services at the most economical rate.

(4) The guidelines outlined above are to be followed when not inconsistent with the rules and regulations of public regulatory commissions or bodies having jurisdiction with respect to the services being procured. The foregoing guidelines are to be applied in the same manner to all communication carriers, whether large or small.

In conclusion, it cannot be overemphasized that the need is great for new ideas and means to reduce communications vulnerability. You must give the problem individual consideration because it is our country in jeopardy.

As the representative of the biggest single customer of the telephone industry, may I express appreciation for the splendid job that is being done in connection with the SAGE program. Without your efforts, we would have no air defense system worthy of the name.

**Left to right: Frank N. Thiltges of Chicago; Wayne S. Lowe of River Forest, Ill.; William A. O'Brien of New York City, and J. S. Middleton of Portland, Ore.**

# Number Services Aspects in Direct Distance Dialing

By RICHARD A. MATHEWS*

*(An Engineering Conference Address)*

NUMBER Services in many ways sounds like a catch-all phrase that includes almost anything that has a number in it. In the broad sense this definition probably would be about right. We think of it as the handling, dissemination, presentation, and the form in which telephone numbers are presented by the telephone company and by the customer. Number Services concern such diverse areas as customers' procedures for making telephone calls, information, intercept service, directory production, directory content and scope, public relations aspects, and facilities and tools needed to handle Number Services in the future.

Direct Distance Dialing (DDD) requires a good deal of attention from those working with Number Services. The telephone industry through DDD is continually increasing the number of telephones that may be reached without the assistance of an operator. Making this expanding service both easy to use, and more satisfying to the customer, should encourage more and more usage. And complete knowledge of "How to do it," i.e., how to obtain numbers of distant telephones, and how to call those numbers directly, is essential to satisfactory service.

DDD is growing by leaps and bounds. By the end of this year about 15.8 million telephones in the United States and Canada will have this service. By the end of next year it will be up near 23.5 million telephones and by 1965 the job of furnishing DDD service to all telephones in the United States and Canada will be nearing completion. In addition to what is now known as DDD will be person-to-person, collect and credit card calls. Even world-wide direct dialing is within the realm of possibility.

Continued growth of DDD is always calling for new approaches to Number Services. With growth, today's small annoyances could be major problems tomorrow, and today's problems could be unmanageable situations in the future unless steps are taken to meet this growth with new ideas and technology.

There are folks throughout the industry at work on various parts of the Number Services job. Paul Henson and the (USITA) Engineering Committee thought you would be interested in the things we in the Bell System are doing and are thinking about. These include ways to increase customer knowledge and use of area codes, improved directory instructions, area information centers, microstorage of information records, and numbering plans.

### *Customer's Use of Area Codes*

One of the most vital aspects of Number Services can be broadly covered with a descriptive title "Customer Education." Through extensive surveys it is found that customers like to dial calls direct. To encourage this acceptance of DDD, we in the industry must do everything possible to make area codes conveniently available to customers who need them and make certain that our customers understand the advantages and the use of area codes, particularly when to use them and when not to use them. I think you will readily see how some of the following things that we are doing will help matters.

First, we are trying to promote the customer's use of area codes as part of the telephone number when making long distance calls. Historically, in placing long distance calls, customers have given the desired city and state and the telephone number. For example, Des Moines, Ia., CHerry 3-9900. In the days of ringdown operation the name of the city and state was essential to the long distance operator since it directed her to a Des Moines circuit in the multiple. Since the conversion to operator dialing the name of the city serves little purpose. In fact, the operator must translate the name of the city back to an area code (515), either from memory or from routing information, must select the first two letters of Cherry and finally key into her equipment 515 CH 3-9900.

We think the time has come to promote customer placement of long distance calls using the area code and 2L-5N. This gives the customer faster service and in DDD cities makes it possible for him to place his dialed calls and his operator handled calls in a similar manner. It also reduces the costs of handling these calls since it eliminates the operator's reference to routing information and eliminates the need for writing the place name on the mark-sense toll ticket.

We have already modified our Traffic Operating Practice in several places to put these ideas into effect. For example, under "Outward" the operator is told that, "If a call is placed by giving an area code followed by a central office name and 5 numerals, or by 2 letters and 5 numerals, or by 7 numerals, with or without a party line suffix, accept it." Under "Securing Routes, Rates and Numbers," the operator is instructed, "If the customer asks for the area code to reach a distant city, consult your routing information if necessary . . . and give him the area code." Information operators are instructed, "If a customer at a distant point asks what he should dial to reach telephones in a place for which you furnish telephone numbers, say 'If you can dial (place) direct from your telephone, the area code is 201.'"

*Mr. Mathews is Number Services Planning Engineer of American Telephone & Telegraph Co. of New York City.

We plan on encouraging customers to give their telephone numbers, including the area code, to people at distant points. To make this more natural, we recently recommended to the operating companies that all station number cards, as they are replaced in conversions or station movement, show the area code as well as the number on a 2L-5N basis *(Fig. 1)*.

In addition to area codes on station number cards we are promoting the use of area codes as part of the telephone number on letterheads, bills, in advertising and on calling cards *(Fig. 2)*. We are starting in our own backyard with this one and some of you who are stockholders in the AT&T company probably noticed on recent correspondence from our treasurer that his letterhead shows the area code 212 for New York City. Right now we are preparing brochures for long distance sales promotion and for distribution to the printing industry in which we point out the merits of area codes on stationery, bill heads, letterheads, cards, etc.

Some of you may have already seen some of the Bell System directories that include the area code in foreign area listings *(Fig. 3)*. New York City is one of these directories where foreign area listings are shown as "201 GE 8-9970" instead of the old method where we said, "Ask Operator for Passaic, New Jersey, GE 8-9970." Besides giving the customer the telephone number in the most useable form, it saves considerable directory space, saves operator work time, provides faster service and promotes the use of area codes.

### *Directory Instructions*

We are also taking a close look at the quality of the job we are doing in the introductory pages in our telephone directories. These directory pages provide instruction material that is always at hand and, in some cases, is the only one that is put in the customer's hands. These pages are widely used as a source of information on many items concerning telephone usage and telephone service. We are planning to issue a suggested directory introductory page format and content which we expect will find wide acceptance. These pages will explain telephone usage to the customers in easy to read language and in a format that we feel is easy to use and which conforms to the best principles of instruction layout. In addition, some uniformity in sequence and arrangement of material will be of advantage in our transient society of today, where a person is likely to use one directory today and another tomorrow. For this reason, it would seem desirable for this to receive industry-wide attention. Our suggested pages will be made available for consideration by Independent companies.

**FIG. 1**

### *Area Information*

The DDD customer who has to secure a distant telephone number now dials the operator and tells her he wishes a telephone number in a particular distant city. The operator consults her routing information for the proper code for the distant city information bureau and establishes connection. After obtaining the number, the customer secures the area code from the distant information operator, from his operator, or from a list and then dials his call. This procedure is awkward, cumbersome and time consuming.

It seemed reasonable that if a customer could dial an area code and number to reach the telephone in a distant area, that some means could be devised to dial that area code and a special number to reach distant information. This special number must have seven digits to conform to the requirements of Direct Distance Dialing. A decision was made earlier this year to use the number 555-1212 and to establish it as a universal toll information number in each of the numbering plan areas. This means that eventually by dialing the area code, obtained from a list or from his operator, and then this number, a customer would be able to obtain any telephone number in any numbering plan area that he can dial.

You may have read in the press that the Connecticut subscribers were informed that they could reach information in New York City by dialing the access code 112 followed by 212-555-1212. This is the first major public notice of the availability of distant information by dialing the area code and universal toll information number. This is a rapid and easy way to obtain numbers in distant places and we feel customers will readily adapt themselves to and use it.

At the present time two areas, Delaware (302) and New York City (212) have been set up so that distant DDD customers may reach information for the entire numbering plan area by dialing the area code and this universal toll information number. Many more areas are well along in their planning to establish similar area information bureaus.

Setting up these NPA (Number Plan Area) information bureaus is a major task in some locations as you can well realize. There are two broad approaches that can be followed in setting up these bureaus.

First, of course, is the arrangement established in Delaware and New York, where all information records and daily addenda for the area are brought together at one information bureau. This arrangement can only be followed in

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 BROADWAY NEW YORK 7 N Y

AREA CODE 212
EX 3-9800

L. CHESTER MAY
TREASURER

**FIG. 2**

*A foreign listing now looks like this:*

Allied Building Cleaners
1410 Hmltn Ave Passaic NJ
Ask Oper for Passaic NJ GE 8-9970

*The same listing as it will appear after the change:*

Allied Building Cleaners
1410 Hmltn Ave Passaic NJ ..... 201 GE 8-9970

**FIG. 3**

some of the geographically smaller areas where transportation is not a controlling factor.

The second alternative is to establish most of the main records, and some of the more frequently called daily addenda, at a centralized location and then trunk out from the information bureau to a local information office for those less frequently called records that are not centralized. Of course, the frequency of calling out should be held to a minimum, to avoid increasing costs by tying up two operators and to avoid slowing down service. This requires the ability at the information position to out-trunk to a long distance point within the numbering plan area where up-to-date information can be obtained. On our present equipment this cannot be done but it is being considered for future information switchboards.

As an interim arrangement it may be desirable to route all calls for the area information operator to an inward board in the terminating numbering plan area where the operator would challenge with the question "Alabama information, which city are you calling please?" The call would then be trunked from the inward board to the local information bureau handling the records for the city desired.

Any of these alternatives can be used and probably will be tried to establish area information bureaus as soon as possible. The cooperation of Independent companies in maintaining up-to-date records will be important in furnishing a top grade information service.

### *Microstorage of Records*

One of the new devices that will aid materially in reducing the bulk problem, in lowering the cost of handling records, and in the centralization of records, is the new microfilm position that we are developing in connection with a leading optical firm. Efforts toward microfilming information records were largely brought about by the bulk problems that have been created in areas of heavy telephone concentration such as New York City, North Jersey and Los Angeles *(Fig. 4)*. For example, the New York positions contain 95 pounds of information records in which there are five million listings. The North Jersey positions contain even more records.

FIG. 4

FIG. 5

As our thinking developed and our plan progressed, it became evident that microfilm storage of information records would also be useful for centralizing records for area information bureaus. The use of microfilm will allow the storage, in a relatively small space, of 10 million listings, which we see as a practical limit of the existing numbering plan for an NPA. It would also enable us to take records in many forms such as rotary files or different size directories and place them all in one easy-to-handle microfilm form for operators' records.

In our preliminary design of this type of equipment, we are also planning to make it possible for the operator to trunk out to other information positions for daily change data on some main records, or for some of the main records for less frequently called points in the numbering area.

A trial using a mock-up of this position *(Fig. 5)* was made in Brooklyn with the operator following an actual call being handled in another regular position. Studies and comparisons of operating work time indicate that the microfilm position can be operated at least as fast as the book record position. Interviews with the people who took part in the study indicated an overwhelming acceptance of this type of record and position. With these results to support us, we are going ahead with development of a full-scale operative model that we expect to have working by the fall of 1960. From this trial we expect to learn much more, not only about the operation of microfilm positions, but about the technical problems in producing records that can be microfilmed, microfilming these records and making them available for operating room use.

### *Numbering Plans*

The present telephone numbering plan of 2 letters of a central office name plus 5 numerals is in effect in about 83 per cent of the telephones in the United States, and, as you know, 7-digit telephone numbers is a requirement for Direct Distance Dialing. Since this was introduced, customers have increasingly used just the 2 letters of the C. O. name. Look at advertising, signs, or television and you will find that 2 letters are being used instead of the full name. About 75 per cent of the Bell System directories use 2 letters and many of the Independents' directories are also using just 2 letters.

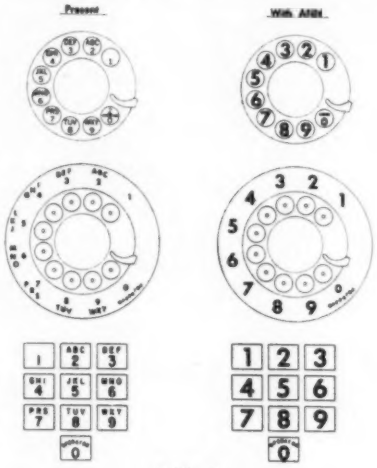


FIG. 6

This saves space, but, in addition, over a period of time, we have come to the realization that there are potential sources of inaccuracy or misunderstandings with central office names. Some names like Dewey and Fieldbrook have a misleading vowel sound in the first syllable. Some like Yukon and Endicott seem to begin with the second letter. Others like Kirby, Murdock and Mercury use different second letters for identical sound.

Many central office names are completely unfamiliar to a great body of telephone users who must rely upon the sound of the name to arrive at a spelling. With the advent of DDD, the problems involved with the spelling and phonetics of unfamiliar central office names are rapidly increasing. There

appears to be a potential hazard in the continued use of central office names.

Some experimentation has been done in the Bell System to encourage operators to quote 2 letters to customers instead of the central office name. This appears to have some merit since it gives the customer only what he needs in order to dial. It eliminates the need to supply unfamiliar names, and cuts down unnecessary repetitions between operators and customers caused by the use of unfamiliar or difficult-to-spell names. In fact, with this arrangement, the letters selected need not be associated with any name. However, the phonetic difficulties caused by the use of letters will not be entirely eliminated until a system of all numerals is adopted.

We are planning to make extensions in the use of all numeral numbering in and around Omaha, Neb. Seven digit all numeral numbering is now in service successfully in Wichita Falls, Tex., and we feel that its acceptance and performance there, in addition to other advantages, make its extension desirable. All numeral numbering will make available more central office codes than are now available on a central office name basis and will permit the retention of larger numbering plan areas, thus allowing customers to reach more telephones on a minimum of digits. It will eliminate the need for translation from numerals to letters for billing purposes and simplifies the recording and reading of mark sense tickets.

On DDD calls with an area code, we feel it is easier to dial entirely on an all-numeral basis than it is to shift from numerals to letters and back to numerals again. It would also eventually improve the legibility of dials or pushbuttons since letters could be removed and numbers made bigger *(Fig. 6)*. Here, too, an all numeral dial would conform to requirements for international dialing. All numeral numbering also avoids the occasional customer objection to a selected name.

If it is decided to go to all numeral numbering, we visualize an orderly conversion of existing 2L-5N cities by starting assignment of the new type numbers on all inward movement. The dial number plates would, of course, continue to have letters and numerals until such time as the nation-wide status would indicate the desirability of all-numeral plates. For some time directories would contain numbers of both types, but after several years, numbers of the new type would predominate. At an appropriate time, coincident with a new directory issue, the remaining numbers and dial number cards could then be changed. Arrangements could be made so that calls placed by either the old or new number would be completed.

This conversion method has important service and cost advantages. The customer will not lose any incoming calls due to number change. An ample period is available to notify customers of the proposed change so that customer expense in changing stationery and other printed material is minimized. No central office equipment expense is involved. Directory expense is minimized since the final change would not be scheduled until most customers were on the new basis.

Many of the world's telephones operate successfully on an all numeral basis today, and some that use letters are converting to all numerals, notably Australia. There is much to recommend all numeral numbering.

Now, a word about codes. With the present numbering plan, only about 540 of the theoretical maximum of 640 central office codes are usable and the X0X and X1X area codes are limited to 152. One hundred fifteen of these area codes have already been assigned. New and extended services, such as extended area service, PBX direct inward dialing, mobile service, personal signaling, and others, are placing increased demands on the number of available codes. So a plan must be developed for getting more area and central office codes. We feel that the plan adopted must provide a substantial increase in the number of area codes and as many more central office codes as possible. Several such plans are now being studied, and we will keep Mr. Henson's committee posted as to the progress of these studies.

There has been a lot of activity in the Number Services field and the surface is just beginning to be scratched. If the Industry is to reap the full benefits of Direct Distance Dialing it must make this service attractive to its customers. This can be done by keeping uniformity in mind, so telephone service is easy to use and is a pleasant experience for the user. Number Services is industry-wide in nature. It requires close coordination and cooperation between the Independent companies and the Bell companies in exchanging ideas and information. In working closely together it can be guaranteed that telephone customers will have all the advantages of the best service in the world.

## Stimulus of Opinion

"Public opinion is the atmosphere of society without which the forces of the individual would collapse, and all the institutions of society fly into atoms." —W. R. ALGER.

## Two Fire Safety Booklets By National Safety Council

Two pamphlets—one dealing with home fires, the other with industrial fires—have been published by the National Safety Council.

A 12-page home pamphlet, "Before It's Too Late!" is dedicated to "all the brave firemen who try to arrive before it's too late." It names and illustrates a list of household fire hazards that can be eliminated.

"One fire can wipe out everything you have—your home, your property, your family," the publication says. "All home fires can be prevented. Fires are man-made." This booklet is an ideal off-the-job safety aid, according to the Council.

"Fred Flame, the Fiery Delinquent," is a 16-page illustrated pamphlet that begins: "Fred Flame was born one morning at the McDoke Company. His mother was a fine fire, but his father was just trash. . . ." Throughout the booklet, the "Fred Flame" character ignites various fires, and the value of safety first before fire gets out of control, is emphasized.

For a single copy of each pamphlet free, contact the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

## AT&T PR Supervisor Wilson, Appointed by SW Bell

Jay B. Wilson Jr., public relations supervisor for the American Telephone & Telegraph Co. in New York, has been named assistant vice president of Southwestern Bell Telephone Co.

He will report to Kenneth Hodge, vice president-revenue requirements for the company in St. Louis, effective Oct. 15.

Mr. Wilson went into the telephone business in August, 1949, as information assistant for Southwestern Bell at Kansas City. Before going to the AT&T Co. in New York in April, 1958, he held several positions in Southwestern Bell's information department in Topeka, Oklahoma City and St. Louis.

Prior to joining Southwestern Bell, Wilson held reporting and writing jobs with the *Kansas City Star*, the United Press in Dallas, the *St. Louis Post-Dispatch* and the Associated Press in Kansas City and Jefferson City, Mo. He was public relations director for the Kansas City Livestock Market in 1947 and 1948.

A native of Edgerton, Mo., he received his A. B. degree from the University of Missouri in 1942 and attended the University of Chicago Law School for one year.

# Test Your T-I Q*

Unless you've been around Plant people for a good many suns and moons, you probably consider their "shop talk" as being only slightly akin to your native tongue (or, for that matter, *any* native tongue)!

"Telephonese" is a language guaranteed to stump any linguist who hasn't "piked a pole," any newcomer who doesn't know a "gaff" from a "gut hook," any order clerk who's still naive enough to believe "donuts" come from bakeries and not Western Electric (they're 45-A connecting blocks.) It's a curious combination of slang, pidgeon English, brevity and vivid imagination — how else could a pole-raising tool become a "deadman" or a mobile office be dubbed "Cynthia!"

How's your Telephone IQ? The quiz that follows will help you find out. One column contains twenty common Telephonese terms; the other, twenty definitions. It's up to you to match them in the proper order.

Each correct answer counts five points. If you score 90 or above, you're either an old hand at this business or you peeked at the answers; 70 or more indicates you've climbed a lot of poles or have a darn good memory; 50 or better means your English and Telephonese are running neck-and-neck, but chances are you're no greenhorn; above 30: you may be new to Plant but you're learning fast (also you're honest — you didn't cheat); below 30: you are probably not a "rig skinner" or a pole climber, but cheer up — some of us have to mind the store!

## TERMS

1. Banjo
2. Gussie or Dummy Lineman
3. Beatin' Iron
4. Nose Bag.
5. Shotgun
6. Headache Bar
7. Poop Fork
8. Idiot Stick or Reducer
9. Black Diamond
10. Squeak Box or Squawk Box
11. Tramps
12. Mickey Mouse Wire
13. Pewter Mixer
14. Grunt
15. Mexican Drag Line
16. Cheater
17. Hog Waller
18. Pot or Kettle
19. Clackers
20. Frost Bar

## DEFINITIONS

A. Lineman's test set
B. Tube-like guide for raising aerial cable
C. Cable splicer
D. Manhole
E. Creosoted pole
F. Shovel with 5-foot handle
G. Long hooked pole for raising wire in wooded areas
H. Lineman's hammer-axe
I. Air-powered jack hammer
J. Pole brand mark
K. Pole-mounted transformer
L. 16-pair color coded wire
M. Post hole diggers
N. Newest man on line crew
O. Shovel with 8-foot handle
P. Pulley bar mounted across back of construction rig
Q. Tool for raising wire from ground to crossarms
R. Canvas tool bucket
S. 9-foot digging bar
T. Transposed wires to eliminate crosstalk

1. O  2. Q  3. H  4. R  5. B
6. P  7. G  8. I  9. E  10. A
11. T  12. L  13. C  14. N  15. F
16. J  17. D  18. K  19. M  20. S

—Reprinted from *NWB*, employe magazine of Northwestern Bell Telephone Co.

# Report of USITA Plant Committee

By M. S. BODINE, *Chairman*

THE PLANT Committee held a meeting in New York City in June, 1959 at the same time the Engineering Committee was meeting. Although we were not able to make it a joint meeting due to the press for time, we were able to exchange ideas and thoughts.

The most pressing business of the committee was deciding upon and arranging a program for the annual meeting. The subjects chosen for talks at the plant conference were ones that we felt were both timely and of universal interest. We have arranged for talks on: "Pressurizing Cable Plant"; "Management's Responsibility for Safety" and "Carrier Maintenance and Test Gear." Time for questions from the floor has been set aside for each subject.

Upon completion of the program the committee discussed the following subjects: "Production Measurements;" "Contracts for Joint Usage of Pole Lines;" and "Methods of Plant Sales."

### *Production Measurements*

It was the opinion of the committee that a uniform system of "Production Measurements," if adopted by the USITA membership, would become an invaluable tool to the respective managements of the member companies.

It should be pointed out that those companies with widely separated properties stand to benefit the most by the use of such a system. It will give them a highly satisfactory means of measuring the production of each area of operation and comparing the results on a uniform base. It will help eliminate inefficient methods and will provide an incentive to operating personnel to better the production thru friendly competition.

For those companies, the operation of which is limited to a small compact area and the management of which is in close personal contact with the plant production, a uniform system of "Production Measurements" will give to the management a means of comparing its operation to the operations of others. Large differences in results will provide the incentive to investigate and correct practices that result in inefficiency.

The Plant Committee has undertaken the burden of reviewing one of the more successful plans of "Production Measurements" in use by a member telephone company with the objective of modifying and developing a plan of "Production Measurements" that could be adopted by all member companies. Much work, necessarily, will have to be done before such a plan can be presented to the board. After the basic framework has been developed it will be necessary to meet with the USITA Accounting Committee to decide upon and to set up the procedures to make the plan operative.

### *Safety*

The problem of safety shall be ever with us. The present-day costs of training our personnel makes an effective safety program a "must" from the economic point of view. However, the economic point of view is no more important than management's "moral responsibility" for the safety of its employes. If safety programs are to be made effective, those responsible for them will be constantly on the alert for new and interesting means of presenting the safety story.

### *New Methods*

All plant personnel will have to look upon new methods of performing our plant functions with an open mind and a critical eye. We are being constantly challenged to find new, better and more efficient ways of doing our daily tasks if we are going to keep the costs of telephone service at a level where the company can make a profit which is so necessary in these days of expansion.

### *Plant Sales*

Plant sales and methods of sales were discussed at the meeting. The committee fully realizes the importance of plant sales. The plant personnel has more opportunity to meet our subscribers and to sell them new services than any other personnel in the telephone company. We were truly sorry that we were unable to include a talk on plant sales in our program this year.

### *Function of Committee*

Your Plant Committee shall endeavor to collect and distribute to all member companies information relating to all new and improved methods of improving plant operations. It is our hope that we shall be able to submit to the board of directors a workable plan for "Production Measurements" that can be adopted by the entire membership of USITA.

## Human Resources

**"American wealth is more in our heads and finger tips than in our earth, although the latter is nothing to sneeze at . . . the reason for American supremacy has been nonmaterialistic.**

**"Our wealth did not come entirely out of the forests and mines . . . in these days of materialism, it is very hard for Congressmen and Cabinet members to see that point."—HOLMES ALEXANDER, *columnist.***

# Pressurizing Telephone Cable Plant in Hawaii

By L. W. ROBELLO*

*(A Plant Conference Address)*

GREETINGS and Aloha from the Hawaiian Telephone Co. and the 50th state! Some of you may be wondering why a Hawaiian from a group of islands in the middle of the Pacific Ocean should be presenting a paper on a modern development such as pressurized telephone cables, but your curiosity may be satisfied when you learn that the Hawaiian Islands had telephones as far back as 1878. In fact, we even had cowboys before they drove the first steer to market in Texas—but that's another story.

Getting back to telephones, the year 1878 was only two years after Alexander Graham Bell invented the telephone; and unless I'm mistaken, quite a few of the states had not accepted the telephone as a medium of communication at that time. On Aug. 16, 1883, the Mutual Telephone Co. (changed to Hawaiian Telephone Co. in 1954) was founded in Honolulu under a charter from King Kalakaua, reigning monarch. As far as we know, ours is the only telephone company under the American flag today to be founded under a royal grant.

Hawaii has the unique distinction of being the only state served in its entirety by *one* Independent telephone company. Back in 1910, Honolulu was one of the first major cities to install an automatic dial system. An interesting side light in connection with this first installation was that it permitted non-English speaking people to dial their numbers and was much simpler than trying to hire operators who could speak half a dozen languages. Today, our entire system is 100 per cent dial operated. From a humble beginning of 100 subscribers, the Hawaiian Telephone Co. has grown to serve nearly 200,000 telephones on the islands of Hawaii, Maui, Oahu, Kauai, Molakai, and Lanai.

The history of cable protection in the Hawaiian Telephone Co. dates back to a year before the Pearl Harbor attack in 1941. We had initiated a system of cable protection for all toll and interoffice trunk cables by introducing dry nitrogen under pressure into such cables. Under this system, cables were first made gastight before nitrogen was applied. By the end of World War II, all of our toll and interoffice trunk cables were protected.

Although the static system did provide good cable protection, its use was limited to toll and interoffice trunk cables on the island of Oahu because of its high cost. The exchange cables, which make up the greater percentage of any cable plant, were left unprotected and, therefore, were vulnerable to heavy tropical rainstorms.

To illustrate this point, during a severe storm on Nov. 28, 1954, more than 9 inches of rain drenched the island of Oahu in a 24-hour period. That storm was a real disaster. As the storm progressed, cable trouble reports started rolling in. Our testdeskmen could not locate the troubles as fast as they were reported. Cable repair crews were dispatched to trouble spots, but the trouble cases occurred faster than they could be repaired. Additional cable repair crews were flown in from the neighbor islands. Repair crews worked around the clock. After six hectic days, service was almost back to normal. The records indicated 253 cases of cable trouble, with about 10,000 subscriber trouble reports. The estimated cost of repairing the storm damage was in excess of $60,000.

A study of the statistics of this storm showed that 61 per cent of all cable troubles resulted from sheath cracks, most of which had occurred months earlier but did not show up until the heavy rain. Then, we got all of our trouble at once. We asked ourselves what could be done to prevent another such disaster. We heard that some companies were experimenting with what was called the "continuous feed pressure system of cable protection," or "continuous flow system," and this appeared to be the best answer to our problem. I would be remiss at this point if I failed to acknowledge the invaluable assistance given us by the Pacific Telephone & Telegraph Co. in getting our program under way.

In 1955, we launched our own continuous feed pressure system program. The theory of such a system is simple. After plugging the cables in the vault, dry air, under 10 pounds of pressure per square inch, was pumped into the sheaths of all trunk and distribution cables leaving our main central office. It was assumed that the air would flow freely through these cables to neighboring central offices, and from these offices it would be further distributed to other trunk and distribution cables. When the air reached the end of a cable, it was believed that a pressure of 2 pounds per square inch could be maintained if the larger holes, or "pukas" as we refer to them in Hawaii, in the cable could be closed. This positive internal pressure would prevent moisture from entering the cable through minute "pukas" or breaks in the cable sheath.

In theory, everything looked fine. We purchased a compressor-dehydrator capable of delivering continuous 200 cubic feet of air per day. We believed that if the air leakage could be limited to about 2 cubic feet per sheath mile per day, this compressor-dehydrator would easily protect 100 sheath miles

*(Continued on page 85)*

*Mr. Robello is General Plant Manager of Hawaiian Telephone Co., Honolulu.

# HERE'S HOW ANACONDA DIRECT BURIAL WIRE & CABLE MAY SAVE YOU MONEY

**New advances in insulation and jacket materials, termination equipment and plowing techniques now, make Direct Burial Wire and Cable Systems more economical in many areas.**

Telephone wire and cable plants are now being buried directly in the earth.

That's where Samuel Morse attempted to place the first commercial line in 1843. He designed a direct burial, fully color-coded cable for America's first telegraph line between Washington and Baltimore, but his insulation proved defective and Morse was forced to take the conductors out of the cable, separate them and string them on poles with crossarms.

Now, the four freedoms of buried plants – (1) freedom from storm damage, (2) freedom from tree clearing and retrimming expenses, (3) freedom from the safety hazards associated with power contacts and pole climbing, and (4) freedom from right-of-way procurement difficulties – can be yours at actual savings in cost.

Anaconda's high-molecular weight polyethylene insulation – tough and resistant to many direct burial hazards – is part of the reason. The use of this rugged, crack-resistant material, together with new terminals and new plowing developments, have overcome most of the problems that formerly stood in the way of economical direct burial applications. Now in selected areas, a direct burial system may cost you less – in initial installation and in maintenance – than an aerial plant!

On the following pages, you will find pertinent questions and answers that show why and how Anaconda direct burial wire and cable may make possible important savings. Read these pages. Then give careful consideration to direct burial wire and cable for *your* telephone system.

# THESE DIRECT ANSWERS TO DIRECT BURIAL QUESTIONS PROVE HOW ANACONDA CABLES COST LESS TO INSTALL...LESS TO MAINTAIN!

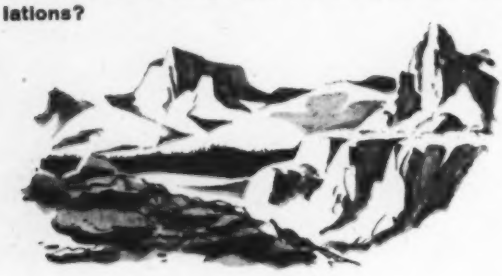
## GENERAL

**Q. What developments in recent years have made buried-plant costs comparable to aerial plant?**

**A.** First, the increased availability of polyethylene at lowered cost. The use of polyethylene as insulation and jacket, thereby taking advantage of its excellent electrical and physical properties, results in a corrosion- and moisture-resistant cable nearly ideal for direct burial purposes. Second, properly designed diesel-powered plowing equipment, reduces labor and other associated costs of burying cable.

While aerial plant costs have tended to increase, the costs of buried plant have been reduced to a level where, in many cases, they are equal to or less than aerial plant.

**Q. What are limiting factors to buried-plant installations?**



**A.** Buried-plant placement costs are materially effected by terrain; rocky or built-up areas or paved streets and sidewalks can make economical plowing impracticable to the extent where even the lower-than-aerial maintenance costs are insufficient compensation. Planning ahead, such as with a suburban-housing builder, can often result in an economical buried plant at a saving over aerial plant. So much of suburban and rural areas are quite suitable for modern planning operations that the future of buried plant is extremely optimistic.

## TRANSMISSION

**Q. Are there any transmission problems peculiar to buried plant?**

**A.** Buried wire and cable are similar to regular cable pairs in their transmission characteristics. They can be treated just like aerial cable plant circuits in transmission planning.

## APPLICATION

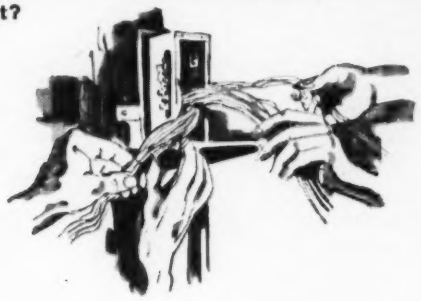
**Q. Splicing has always been troublesome. Has this problem been licked with the new products?**

**A.** Yes. Pedestal-mounted housings, which are available from a number of manufacturers, have been designed for this purpose. The buried cables or wires are brought into the weatherproof housings and terminated on terminal strips. This system not only removes a possible source of trouble resulting from buried splices, but provides convenient facilities for efficient installation, testing, and maintenance.

**Q. How are customer services connected to buried plant?**

**A.** Special terminals mounted on pedestals are now available for buried plant. The buried wire or cables are brought into the terminal housing and the proper pairs terminated. Service drops, aerial or buried, are connected to the terminal strips just as to aerial cable terminals.

**Q. What about electrical protection of buried plant?**



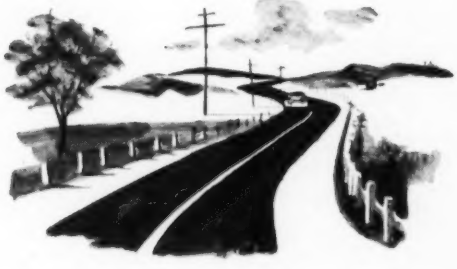
**A.** The built-in high-dielectric strength of buried cable and wire minimizes the need for special protection (see construction details, page 4). The shields of the wire or cable should be grounded to all pedestals and, wherever it is convenient, connected to good electrical grounds. When long runs of open aerial plant are connected to buried cable, suitable protector blocks should be used.

## PLOWING TECHNIQUES

**Q. What type of plowing equipment is generally used with the buried wire and cable described?**

**A.** The most desirable plow is one that makes a slot by compressing the earth just wide enough for placing the cable. The cable is fed down through the plow blade, which is maintained at the proper depth, in a smooth tube having a means of bending the cable without damage, and is placed in the bottom of the slot. Since the cable has been plowed with minimum disturbance to the surface, backfilling is not required.

**Q. Is the plowing done on private or public rights-of-way?**



**A.** The cost of the private rights-of-way, fences, farm crops, etc., generally makes it too costly to plow main cable runs along private rights-of-way. The best location is along highway rights-of-way. In some cases, the highway shoulders are used. In others, the extreme edges of the highway right-of-way is preferred. In all cases, the highway officials having jurisdiction should be consulted and a permit obtained. Experience has shown that if the highway engineers are properly informed as to the type of plowing involved and the minor disturbance to the highway surface, they will grant a permit since buried plant eliminates a pole line and the necessity of extensive tree clearing along the highway.

**Q. What plowing depths are usually used?**

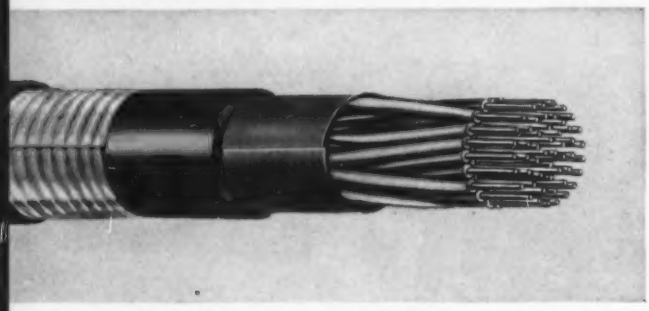
**A.** Normal depths of 24 inches for cable and 18 inches for buried wire have been found satisfactory in most areas. Where rocks, ditches, or other obstacles are encountered, the depths will need to be modified.

*MORE INFORMATION ON FOLLOWING PAGE* ⟶

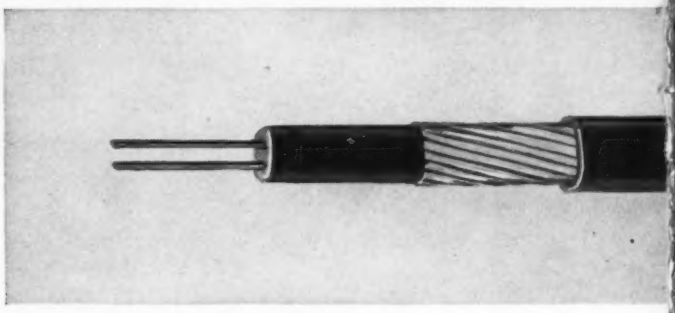
*THE INSIDE FACTS ON*

# THE CONSTRUCTION OF ANACONDA DIRECT BURIAL TELEPHONE WIRE AND CABLE

## See for yourself why Anaconda Direct Burial Telephone Cable resists underground hazards . . . gives long life and dependable service



*TYPE PCP AND PCPG*



*TYPE BW*

### DIRECT BURIAL CABLE:

**Cable Core:** Conductors insulated with high-molecular weight color-coded polyethylene provide excellent electrical properties with great mechanical toughness and crushing resistance.

**Inner Jacket:** This inner jacket consists of high-dielectric strength polyethylene. It provides a second line of defense against moisture penetration in the event that the outer jacket is damaged. It also provides a high-dielectric strength barrier against lightning impulse breakdowns between the pairs and the shield.

**Shield:** The PCP type has 5 mils of longitudinally applied *copper* tape, rather than aluminum tape used in aerial cable. The copper provides a corrosion-resistant, low-resistance shield. This shield, coupled with the high-dielectric strength of the inner jacket, makes the over-all cable highly resistant to lightning damage. The copper shield also provides mechanical protection against the attacks of termites and rodents.

In areas where gophers are known to exist, additional protection against attacks by these rodents has been found necessary. For this purpose, the copper shield thickness has been increased from 5 mils to 10 mils and cables with this shield thickness are designated PCPG.

**Outer Jacket:** High-molecular weight polyethylene, highly resistant to abrasion, weathering, moisture, fungus, corrosion and environmental cracking.

### DIRECT BURIAL WIRE:

**Insulation:** Conductors insulated in parallel with black high-molecular weight polyethylene. The insulated core has a rounded oval shape to facilitate tight fit of the steel armor wires – thus minimizing capacitance unbalance to ground.

**Shield:** A helical serving of closely spaced flat steel wires for mechanical protection against attacks of termites and rodents. The shield wires are flooded with an asphaltic base compound to resist corrosion. The shield, coupled with the very high-dielectric strength of the core, provides excellent resistance to lightning damage. The helical method of application of the shield wires also results in their contributing substantially to the tensile strength of the wire (over 400 pounds) which is needed to withstand stresses in installation and operation.

**Outer Jacket:** A tough, flexible thermoplastic jacket provides added mechanical protection for ease of installation and longevity of operation.

PHONE THE MAN FROM

# ANACONDA®

FOR TELEPHONE CABLE

*the independent manufacturer for the independent telephone industry*

of cable. The unit was installed in our main central office in downtown Honolulu and was connected to trunk cables running to a central office located about 2½ miles away. At that point the trunk cable sheaths were connected through a manifold to the exchange distribution cables leaving that office.

When the compressor-dehydrator in the main office was "fired up," our beautiful plan began to fall apart! First of all, we found that cables do not make very good "gas mains." The resistance to the flow of air from one end of our trunk cable to the other end was too high to permit much air to reach the second office, and we learned the hard way that paraffined splices restrict the flow of air and have to be by-passed. So, it turned out that one compressor-dryer could supply only the cables to which it was directly connected, thus precluding the pumping of air to adjacent offices.

The second flaw in our theoretical approach appeared when we found that too many manhours of work were required to reduce air leakage. Our efforts to reach the original consumption objective of 2 cubic feet per sheath mile per day were time-consuming and expensive, and we could visualize long delays in obtaining complete protection for our cable plant.

In order to overcome these difficulties, we decided to capitalize on our experience and try a new concept. To get the maximum protection in the shortest possible time at a minimum of cost, we decided to connect a high capacity compressor-dryer unit to all cable sheaths in a given office, "fire up" the machine, and pump air in all directions. By so doing, our largest cables would receive immediate protection. As time permitted, we would check pressures along the cables, plug major leaks, and thereby extend protection to the balance of the cables.

Once given the "green light," we embarked on this new approach. Since there were no satisfactory compressor-dryer units available at the time, we improvised our own assembly. A large air compressor was combined with a dryer to produce 5,000 cubic feet of air per day at 10 pounds pressure. This unit was installed in our main central office, replacing our original 200 cubic foot unit. It was connected to 54 cables, which fanned out from this office. When the unit was turned on, we discovered that each of several cables was consuming 300 to 400 cubic feet of air per day. We found that only 12 trunk cables were airtight, while the remaining 44 were not. We dispatched crews to locate and plug the larger holes, and immediately the air consumption dropped to normal levels. So successful

**Left to right: R. F. Hardy of New York City; W. H. Moore of Russellville, Ark.; Joe E. Trower of Mannford, Okla.; M. E. Meyer of Cleveland, O.; W. Luippold of Boston, Mass., and D. G. Harper of Cleveland.**

was this new method, that it was extended to three other large offices in Honolulu. Two of these offices were equipped with our improvised assemblies, while the third office was equipped with the original compressor-dehydrator unit—the capacity of which had been increased from 200 to 2,000 cubic feet per day by replacing the compressor with a larger unit. This initial phase of the program was completed in the fall of 1956.

In order to extend cable protection to our many smaller offices, we searched for and found a compact refrigerator-compressor air dryer with a capacity of 500 standard cubic feet of air per day. This unit operates on what is known as the "squeeze freeze" principle. Air which is compressed to about 150 pounds pressure per square inch is then cooled to approximately 32° F. As a result of this process, approximately 75 per cent of the moisture in the air is condensed in the form of liquid water, which is drained periodically. A further reduction in the moisture content of the air is accomplished when the air is expanded to about 10 pounds per square inch and warmed to atmospheric temperature. The foregoing process of moisture removal will reduce the relative humidity of ambient air from 100 per cent at high temperatures to about 2 per cent at 70° F.

We investigated, liked what we saw, purchased and installed many of these units in our smaller offices. We have found them to be well designed and economical. They also have a considerable reserve capacity for short lengths of time. This is very important. It has been our experience that this reserve capacity is extremely effective during bad storms and when accidental sheath breaks occur.

In order to choose a compressor-dryer unit of the proper capacity, it is first necessary to estimate the approximate daily air consumption for the office. Initially, we determine the total sheath miles of cable out of the office to which pressure will be applied. We then relate this figure to the condition of the cable and determine the capacity as follows: 7 cubic feet of air per day per sheath mile for cable that is in good condition, 10 cubic feet for cable sheath in fair shape, and 12 to 14 cubic feet for cable that is in poor shape.

No continuous feed pressure system can operate successfully without plugs. It is necessary to plug each cable in the cable vault to prevent air from flowing out into the switchroom at the main frame. It is important that the plugging be done in the paper or pulp-insulated portion of the cable and not the tip cable. We also use plugs to stop the flow of air at points where cables connect to distribution terminals or any other non-gastight terminal that may be leaking excessively. We have been using what is known as the "cold resin" type of plug, which is composed of a mixture of two liquids. When injected into the cable, a chemical reaction takes place to form a hard plastic plug. The cold resin plug has proved to be very effective and quite economical to use, and we have been able to make three to four of these plugs in about the same time originally required for one asphaltum plug.

Thus far, I have discussed only the compressor-dryer units we have used. However, the success of any continuous feed pressure system is dependent upon several other items of equipment.

In order to measure the volume of air flowing into the cables, we first decided to use liquid petroleum gas meters, commonly referred to as LPG meters. Each meter was connected in series with the air supply tube which was connected to the cable sheath. Connections were made by using copper tubing. When put into operation, these

meters furnished us with a daily record of air consumption for each cable, but we found that the meters gave no reliable indication of leakage from the cable sheath if the leak occurred more than 2,000 or 3,000 feet from the central office, because cable resistance limited the flow of air. Because of this, we had no way of determining whether or not the far ends of the cables were protected. This presented us with another problem.

We learned that a so-called "end-pressure switch" had been developed and that it would indicate the presence or absence of protection at the far ends of cables. We purchased some of these switches, installed them, and have found them very successful.

These end-pressure switches, which are operated by small pressure bellows, are connected to the cable sheaths at the ends of the various branches of each cable. The switch is adjusted to operate on whatever pressure normally exists at that point, usually 1¾ to 2 pounds per square inch. The contacts of the switch are connected across a subscriber's cable pair in the terminal near the location of the switch. This switch is so designed that if the pressure in the cable is above the value of the switch adjustment, the electrical circuit is open to the subscriber's line. When measured, the line shows an insulation resistance of 5 to 20 megohms. If the pressure falls below the preset value, the switch closes and a 330,000-ohm resistance is placed across the subscriber's line. Some of you may be wondering what effect this has on the subscriber's service. Actually, this resistance does not affect transmission, ringing, or supervision in any way.

It is possible to test all cables equipped with end-pressure switches on a regularly scheduled basis from the testdesk and thereby determine whether or not a given cable is under pressure. It is important that records be kept of these tests as well as locations of end-pressure switches and telephone numbers to which they are connected. Our experience has shown that during rainstorms and also windstorms, when flying objects may cause damage to aerial cable, it is important to step up the frequency of these tests.

I cannot overemphasize the importance of maintaining adequate pressures in the cables. We have installed test valves at various points along the cable routes to accurately measure the pressure at those points. With 10 pounds of pressure at the central office and an objective of 2 pounds at the end-pressure switches, the required pressure at intermediate test points would vary roughly with the distance from the central office. We do not get a direct relationship between distance and pressure, because of variations in the rate of air flow along the cable route. These variations are caused by changes in cable size, branch cables, leaks, interconnected sheaths, etc. To determine the proper pressure at a test point, it is necessary to use a certain amount of old-fashioned "horse sense."

**Left to right: Omar Helms of Sanborn, N. Y.; Frank Wits and Edward Diekhoff, both of Pekin, Ill., and W. L. Wolff of Washington, D. C.**

During some of our recent rains, we have inspected flooded manholes and, in several instances, have discovered strings of bubbles rising from the submerged cable. When time and manpower became available, the manhole was pumped out and the sheath break repaired without opening the cable sheath. In most of these cases, service was not interrupted by the sheath break, as would have been the case if the cable were not under pressure. Usually, leaks of this nature are too small to operate the end-pressure switches or to be indicated on the flow meters.

Another important phase of our program is that of locating air leaks in the cable. (Incidentally, we do not recommend flooding manholes, or the "string of bubbles" method, to locate leaks in the cable.) Where we have a series of pressure test valves along a cable length, we find that the so-called "gradient method" is quite reliable. This is the same method originally developed for the static system. Leaks are located by the use of a soap spray applied to cables in manholes. The same type of spray is applied to aerial cables by means of a unit that rides the messenger on a wheel. This method is very convenient and fast.

**C. H. Burris (left) and T. A. Danielson, both of Warsaw, Ind.**

Special precautions are necessary to maintain protection in pressurized cable when cable sheaths are opened for transfers or for any other reason. If the opening is to be made within approximately 1,500 feet of a compressor unit, it may be necessary to turn off the supply of air to the sheath being opened to prevent the leak from causing an overload on the compressor. If the opening is to be closed the same day and the weather is good, no other precautions are needed. However, if the sheath is likely to be open for several days, the pressure beyond the opening will fall low enough to result in loss of protection. In this case, tanks of nitrogen gas may be connected to the sheath through regulators about 1,500 feet beyond the opening to keep the pressure up. It is essential that these tanks be checked frequently to guard against their being depleted before the sheath is closed.

To date, we have applied the continuous feed pressure system of cable protection to our plant on the five major islands in the Hawaiian group. We have equipped 29 of our 58 central offices with compressor-dryer units, and some of our smaller offices which have relatively short cable runs to be protected are equipped with nitrogen cylinders. On the island of Oahu alone, 1,050 sheath miles of cable serving

*(Continued on page 158)*

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for
Cross Country
Microwave

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This busy metropolitan area is the termination of over 1000 miles of microwave systems, providing reliable communications across town and country for the Western Union Telegraph Company. ANDREW's experience in research, development and manufacturing is the reason why the dependable performance of an ANDREW PS8-37, eight-foot Parabolic antenna was selected for this installation.

**All ANDREW parabolic antennas** conform to the newly proposed RETMA-FCC standards governing radiation patterns and side lobes, and they are *guaranteed* to give specified pattern and VSWR in your microwave system.

From a selection of over thirty stocked parabolic antennas, you can choose the type and size that will give optimum system performance with absolute mechanical and electrical reliability.

**Microwave engineers** have found ANDREW a valuable partner in planning their communication systems. A parabolic antenna computer for calculating system performance is available to you upon request. Write today for information and expert advice relative to your microwave antenna system requirements.

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# A Selected List of Telephone Books

• ***CABLE—Modern Methods of Fault Location, Installation and Splicing.*** **Published by Telephony Publishing Corp.**

**80 pages—8½ in. x 11 ins. The only cable book on the market. Prices: One to 5 copies, $1.00 each; 6 to 25 copies, $.85 each; 26 to 50 copies, $.70 each; over 50 copies, each.....$ .50**

Reprint of 19 installments of article entitled "Cable Splicing," by Daniel Seitz, published in TELEPHONY. It is the only cable book on the market. Covers (1) the history of the development of cable; (2) composition and manufacture of cable; (3) modern methods of installing aerial, underground and building cable; (4) techniques and detailed instructions for splicing cable; (5) methods of locating and clearing cable faults; (6) instructions for pressure testing of cable.

• ***Electrical Principles Used in Carrier Systems,*** **by Harold B. McKay; 44 pages; illustrated; size 8¼" x 11¼". Prices: 1 to 100 copies, $.75 each.**

A reprint of nine popular articles which appeared in TELEPHONY. The scope of the articles include vacuum tube principles, suggestions for a new way of thinking about electrical circuit components, actual parts and functions of carrier systems and a guide to trouble shooting on carrier equipment. It is ideal for use in training schools. The author has been in the radio and telephone communications field since 1920 and has had a broad experience in carrier design and operation.

• ***Glossary of Telephone Words and Terms,*** **by Emerson C. Smith, 54 pages; size 4" x 8¾". Prices: 1 to 101 copies, $.50 each; 101 to 500 copies, $.45 each.**

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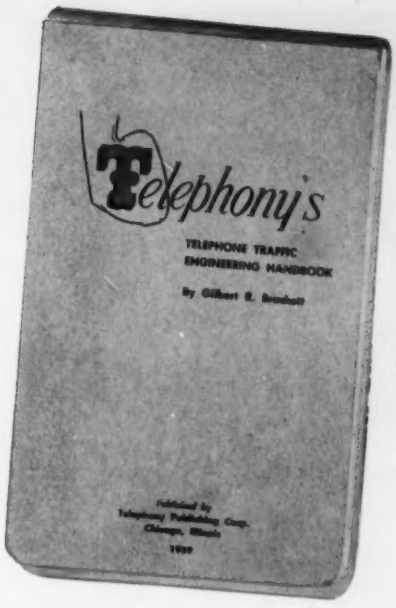


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# Management's Responsibility For Safety

By RALPH J. CROSBY*

*(A Plant Conference Address)*

MANAGEMENT'S responsibility as respects the prevention of accidents is in the same order as its responsibility for the administration of any other activity that affects the efficient operation of its business.

Accident prevention is a function of management, because only management has the authority to correct the practices of employes and the resources to change the conditions which can cause operation upsets.

Certain misconceptions in the past, many of which still influence the action of present-day managements, have seriously handicapped the progress that could be made, not only in reducing personal injury, but also in reducing the material losses that are the result of accidents.

Prior to the inception of compensation laws, there was very little organized accident prevention work done in industry. What was done was primarily the inspection of physical conditions especially those that presented the possibility of a catastrophe. The idea of making accident prevention a part of the daily routine, or an inherent part of the production schedule of a plant, was in the minds of a very limited group.

Beginning in 1911, the passage of compensation laws by several states forced attention on the part of management to the cost of accidents to workers. The law required employers to remunerate injured employes whether or not negligence could be proved. Although this change did direct attention more to finding the cause of accidents rather than the degree of fault on the part of a worker, which had been the case, there were other factors that influenced the activity of management in the field of prevention.

Compensation insurance was made available and relieved management of the financial liability.

The practical application of the basic philosophy was not understood.

Attention was focused on injury prevention rather than accident prevention.

The causes of accidents, and the reason for the causes, were not recognized as being the same as the causes of production interference.

The control of employes' performance, where safety was involved, was not considered a part of the supervisor's responsibility.

But, today, things are different.

We know that an accident is a symptom of something wrong, either in our method of operation, or the attitude of our people.

We know that an accident is any unwanted or unplanned occurrence and not limited to personal injury.

We know that the cost of accidents involves more than the compensation and medical payments. We know that the down-time, waste, interference, delay and damage to equipment far exceeds the cost of injuries.

We know that accidents don't just happen and, in the great majority of cases, do not occur from unforeseen or unexpected circumstances.

And we also know, today, that it is reasonable and practical to say that supervisors have the opportunity and should possess the qualifications necessary to control the performance of employes under their direction.

Successful accident prevention requires the intelligent application of these proven principles. It is management's responsibility to do the planning, to establish the objectives and organize the procedures that will be the frame work for achieving the best results.

It is management's responsibility also to maintain an active interest in the functioning of the procedures and to do sufficient checking to identify any weakness. A lack of top management's continued support is most frequently the chief cause of an ineffectual program. Management must not only furnish the initial impetus; it also must maintain its momentum.

In establishing a program, management should adopt the same approach as they do to other problems. It is not to be expected that all of the details of a program can be achieved immediately. It takes time to change attitudes, to adequately indoctrinate people, to study operations. Some long-range planning is necessary, but the ultimate objective should be recognized in the established procedures.

Management's responsibility in safety is divided into four parts:

(1) A clear statement of company policy.

(2) An outline of the duties and responsibilities of persons in the line organization as respects their participation in the program.

(3) Establishing the procedures that will be adopted to achieve the objectives outlined in the policy statement.

(4) Designate the representative of management who will administrate the program.

Let us now consider these four items in a little more detail.

### *Statement of Policy*

A top executive must set forth a clear statement of policy as respects the importance that is attached to the indi-

*(Continued on page 94)*

*Mr. Crosby is Assistant Vice President of Marsh & McLennan, New York City.

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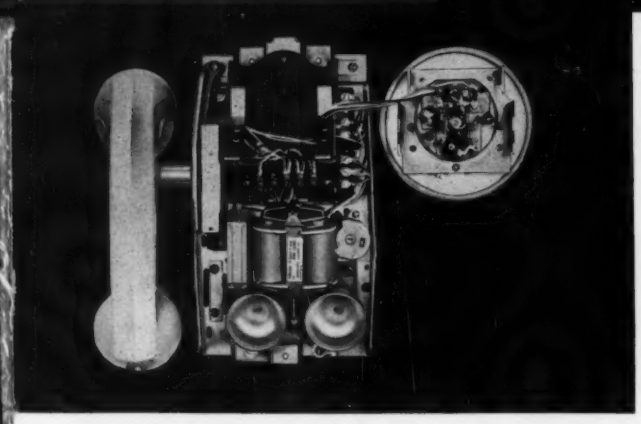

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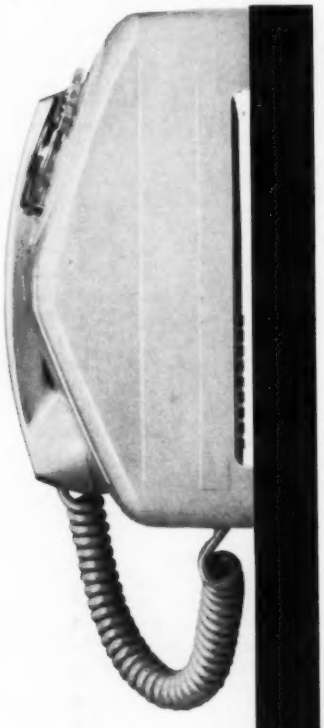

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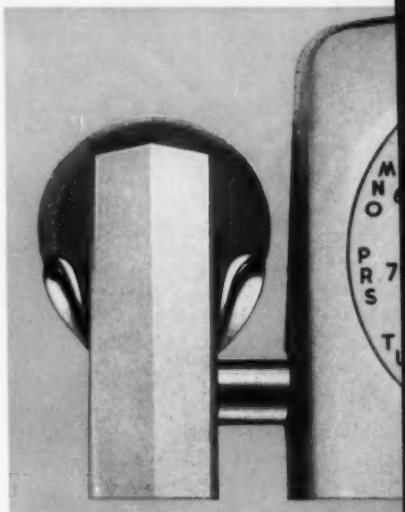

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vidual's participation in accident prevention activities. He must express the benefits that will result from both a humanitarian aspect and economic point of view. He must explain the value that an accident-free operation represents to the individual, to supervision, and to the organization.

There should be a clear indication in the statement that management is convinced that the value of an accident prevention program is measured not by the savings in direct cost, but rather by the elimination and control of the causes of potential losses.

It is important that this policy be understood all the way down the line, because what management thinks is bound to influence the attitude of everyone in the organization.

**Left to right: Robert A. Dwyer of Brookston, Ind.; Jack Dolsen of Inkster, Mich.; L. W. Proctor of Dallas, Tex., and Kenneth Bisher of Brookston.**

### *Responsibilities*

The administration of the details of the accident prevention program may be delegated to a department, or individual, but the responsibility of preventing accidents rests with all supervisory personnel. Each supervisor must accept the responsibility of controlling the performance of the people under his or her direction.

In view of the fact that the causes of accidents are the same as the causes of performance failures, we are not adding any additional duties.

Each department head must accept the responsibility of carrying out the intent of each procedure in the manner it will be outlined by the individual delegated by management to administer the program. There are nine areas of activity that warrant special consideration.

### *Procedures*

(1) *The Indoctrination of Employes.* All employes should be indoctrinated as respects their participation. They should understand the interest that management has in their safety. They should be told what management has done to make their job and working environment a safe working place. They should be shown that accidents do not occur from unexpected or unforeseen circumstances, but rather are the result of employes deviating from standard right ways of doing a job. They should be told that no job anticipates that a person will have an accident or be injured. Each job has been thought out so that there are no unusual physical demands of an individual.

It is anticipated, however, that employes will follow instructions and, if they are confronted with some circumstance that seems to be awkward or in their judgment imposes some hardship upon them, they will bring the matter to the attention of their supervisor and not take unnecessary chances or deviate from the instructions they have received.

As part of the indoctrination, pictures of common violations of safe working practices should be shown to fix the ideas being expressed.

This instruction can be given by people within the personnel department by the department head or one of his supervisors. It should not necessarily always be the function of the safety administrator.

(2) *The Development of Operating Rules.* Accident prevention is primarily the process of checking for the existence of unsafe conditions or unsafe work performances. There should be no reservation in any supervisor's mind as to what are the important instructions as related to the people under his or her direction.

Each job should be studied and specific rules developed that reflect the experience of individuals plus the knowledge gained from past accidents. Studies made with the standard list of accident types in mind will bring to light many serious potential causes that can be made the subject of a rule or instruction.

(3) *The Instructions of Supervisors.* We cannot assume that supervisors will automatically assume a full share of responsibility as respects their part in an accident prevention program. They frequently have mental reservations about any statement that says that they are responsible for the accidents occurring in their department.

For example, they often fail to understand the close relationship of accident prevention and performance efficiency. They labor under the false impression that accidents are bound to happen and there isn't much that you can do about it. They ask "what more can I do than to tell a person how to do his work." They do not appreciate the opportunities they have to see accidents in the making.

The investigation of an accident, for example, is something in which the participation of the immediate supervisor of the employe involved can be of primary importance. But, if the supervisor feels that the investigation is for the purpose of attaching blame, or if he feels that because he was not an eye witness to the occurrence, that he cannot investigate it, then we lose the benefit of his experience.

In order to overcome these obstructions, supervisors should receive an instruction course that specifically explains the importance and practical approach to each part of the program as it affects their daily activity. If supervisors are to inspire their men to a higher concept of working safely, the first step is to build their conviction that it can be done. The biggest roadblock to improving the attitude of the worker is the foreman's disbelief that it can be done.

(4) *Inspections and Observations.* As has been mentioned, checking for the detection of accident causes is a prime requisite for effective accident prevention. A procedure must be established for making such inspections, not only by the safety administrator, but by someone within each department. The inspections should not be limited to physical or mechanical hazards, but observations should be made of employe performance to be assured that instructions are being followed. The operating rules and the causes of past accidents offer an excellent guide for the supervisor who is sincere in his efforts.

The procedure should make it clear that very often a single observation or check of a person is not sufficient to get a true pattern of his performance. It may be necessary to make

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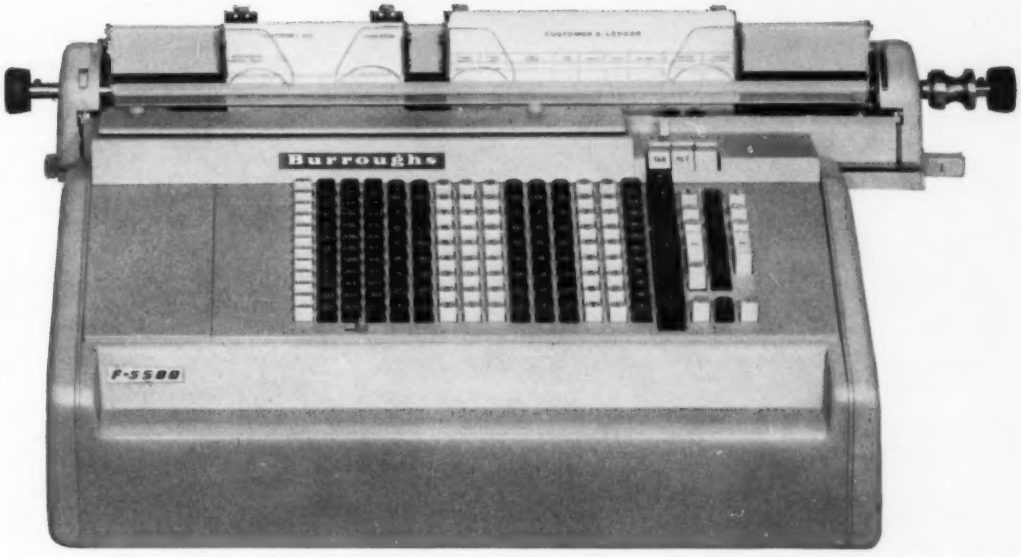


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frequent random observations before a supervisor can be reasonably certain that his instructions are being followed.

When the investigation of an accident discloses that an employe failed to follow instructions, it is reasonable to conclude that the checking beforehand was inadequate. We cannot take it for granted that, just because accidents are not occurring, rules are being followed.

(5) *The Reporting of Accidents.* A procedure must be established for the reporting of all accidents, regardless of the severity of the resulting injury or loss.

But, insofar as injuries are concerned, when they require only first aid treatment, sufficient information should be recorded in the daily log to enable a qualified person to review the data and determine whether or not the occurrence warranted a more thorough investigation. As we observed from a consideration of the factors in the accident sequence, it is the severity potential represented in the accident cause, rather than the extent of injury that should influence our action. The causes of major and minor injuries very often are the same.

(6) *The Investigation of Accidents.* A definite procedure must be established for the investigation of all accidents. This is something more than the reporting of the occurrence. Our objective is to learn what we can from the accident so that effective corrective measures can be taken to prevent a reoccurrence of the same cause.

In view of the fact that we depend upon supervisors to control employe performance, or conditions under their charge, it is only natural that they should be the ones to make the investigation. An accident is evidence of the fact that something has gone wrong, and it is rightfully a supervisor's responsibility to control any occurrence that interferes with planned operations.

Moreover, there is no more effective means of convincing a person as to what was the cause of an accident than to have him personally dig in and find the facts himself. Accident investigation is a fact-finding process that enables us to tighten up existing controls, or initiate whatever new instructions might be necessary to prevent a similar accident.

(7) *Correlation of Accident Data.* A procedure should be established that will require the safety administrator to correlate the accident data required from the investigation reports, in a manner that will focus attention on unfavorable trends or outstanding accident causes.

**Left to right: Allen H. Hahn of Minneapolis, Minn.; Eric J. Goleas and Cal Sloan, both of Chicago, and Robert G. Wade of Lewiston, Maine.**

A simple means of accomplishing this objective is to tabulate accidents by agency and cause for each department. The agency can be interpreted as being the object, equipment, job, or area that best identifies where to look for evidence of the same cause that has already produced accidents.

Such a tabulation is a perfect guide when making check inspections or for recognizing the repetition of a cause especially when the severity of injury or loss is not great enough to attract much attention or to make much of an impression.

It can also be used to advantage when a department head has occasion to talk to a supervisor about his performance, or lack of performance in controlling unsafe work methods.

(8) *The Control Unit.* Management should establish a procedure that will enable the safety administrator to make direct contact at a level where executive action can be taken when the need arises. This control could be an individual or a group, but, in any case, it should have the authority to make decisions and to act when facts are presented.

The safety administrator, for example, may find from his study of the accident data that the action taken to correct certain causes is inadequate. The department head, or supervisor, may have done all within his authority. There might be the need for a major expenditure or the change of some standard practices. The procedure should make it possible for the safety administrator to bring these facts to the attention of management without red tape or delay, and have a decision made as to what will be done to control the situation.

The control unit should also be the place that a progress report would be considered. Certain activities affect the over-all accomplishment of the accident prevention effort to a much greater degree than others.

When weaknesses in the program are recognized, they should be evaluated from the point of view of how much an improvement should affect the over-all performance.

This report of progress, prepared periodically by the safety administrator, should submit not only statistical data, as respects accident frequency trends, but should provide a continuing evaluation of the effectiveness of existing procedures, which will identify the outstanding problems that deserve preferential treatment. The report should indicate the action that is being taken and the progress or reasons for lack of progress in solving the problem. This will give management the opportunity of supplementing the action if it is considered necessary.

(9) *The Accident Prevention Administrator.* The function of the accident prevention administrator is not truly a procedure in the same sense as the other items which have been covered. However, his function is so often misunderstood that it should be clearly stated when the program is initiated.

Establishing an accident prevention program means more than outlining the procedures. The program has to be explained. Individuals in supervisory positions have to be coached after they have received their indoctrination instruction. The procedures themselves need to be re-evaluated at frequent intervals, and management, at operating levels, needs a helping hand to carry out the details of the program. These are some of the functions of the administrator who should be in a position where he is identified as a direct representative of top management, and has a direct line of contact with the policy making level.

It is his responsibility to recognize weaknesses, either in procedures or in-

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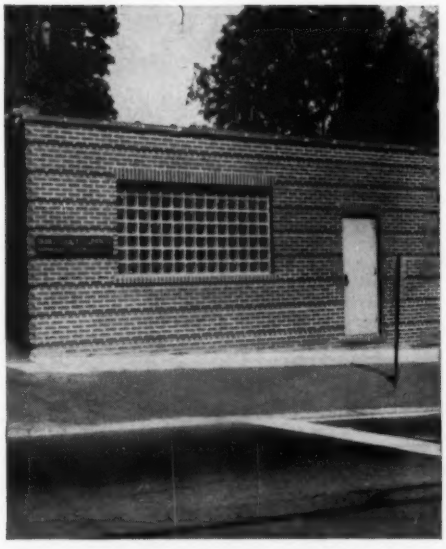

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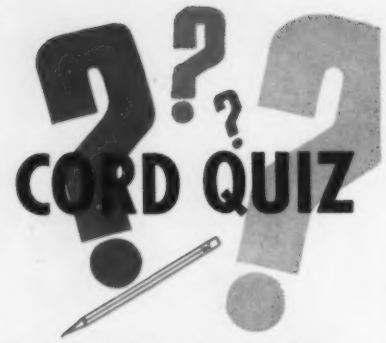


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dividuals, and be able to bring the situation to managers' attention for action.

It is his responsibility to analyze accumulative records and select items of major concern for consideration by management.

It is his responsibility to uncover any unusual difficulties that are being encountered by operating heads, and to bring the facts to a higher level if necessary for action.

The administrator's job is not a policing action in the sense that it is his responsibility to find all of the unsafe conditions and to observe all of the unsafe performances and to have all of the solutions. It is a policing job, however, insofar as keeping management informed as to the progress or reasons for lack of progress.

The accident prevention administrator is management's advisor. He must, however, always be conscious of the fact that management's interest needs to be stimulated periodically and, to this end, he should take advantage of every opportunity to present material that proves the growing value of the accident prevention program.

When we have a program established along these lines, we have something to shoot at. Each procedure identifies an area of activity that lends itself to continuing improvement.

Most of the activities are of such a nature that it is not anticipated that complete satisfaction would be achieved quickly. In some instances, progressive improvement will require an extended period of time.

Because this is true, it is important that we repeat the importance of management's maintaining its interest by checking on performance. Management must insist upon receiving information that will indicate whether or not the procedures and plans are being followed, and that suitable progress is being made toward achieving the desired objectives.

With such information available, management can take action to correct unsatisfactory situations and thereby continue to demonstrate its interest.

## New Training Head, Other Plant Changes For SW Bell

Max L. Hilliard, plant operations engineer for the Southwestern Bell Telephone Co. has been named general plant training supervisor.

In his new assignment, Mr. Hilliard, who has 40 years of service to the telephone industry, will make special studies of plant training needs and prescribe facilities and procedures to meet these needs. He will continue to report to the assistant vice president-operations.

His successor will be M. T. Buhl.

In other changes:

William H. Neukomm becomes general plant manager for the Missouri-Illinois area.

R. Ray Shockley is general plant manager for Kansas.

Chester L. Todd is division plant superintendent in Tulsa, Okla.

Gene J. Shnell is Missouri-Illinois area plant supervisor.

## General of NW Scores With Bowling Alley Telephones

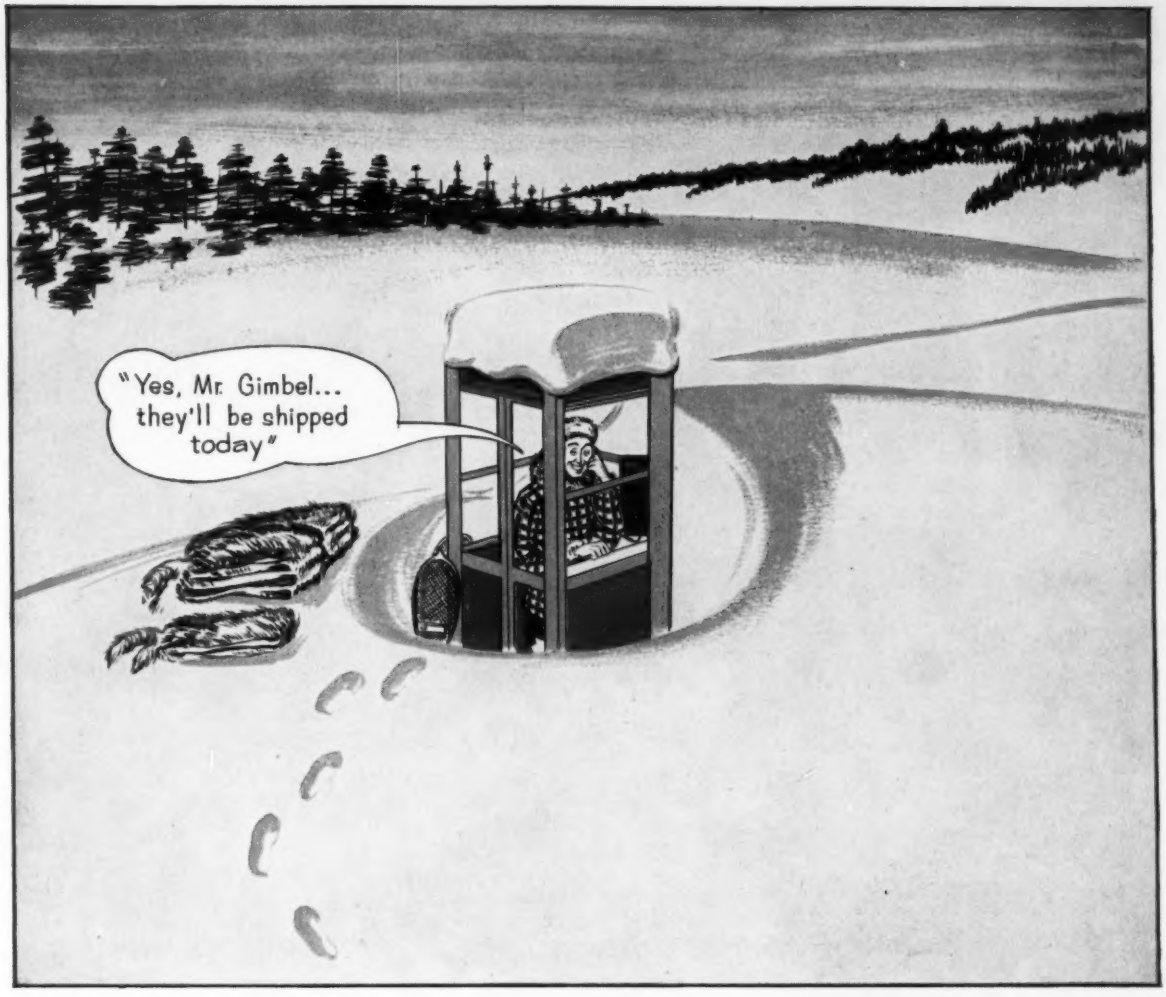
The General Telephone Co. of the Northwest has participated in what is believed to be a "first." General announced on Sept. 25 it had sold and installed alley telephones in the Paul Bunyan Bowling Center, Old Town, Ida., marking a new point in convenience to customers of the indoor sport.

Calls will go directly to the person while he is bowling and from telephone instruments attached to telescore units at the edge of the alleys (see picture), he will be able to carry on a conversation without disrupting the game.

Barry James, proprietor of the center, reports that he has traveled extensively, studying the various types of bowling centers and has never seen nor heard of a similar installation.

General of the Northwest also supplied and installed the public address systems and special signal system between the food preparation and dining areas.

**Louise Kirk, bowling instructor at the Paul Bunyan Lanes, Old Town, Ida., prepares to answer the telephone installed on a Telescore unit at the edge of the alleys.**




## Follow the trend to Reynolds outdoor booths for extra revenue

We can't promise you how much extra revenue you'll pick up with paystations located on a trap line in the frozen North. But just about *anywhere else* you can string a 'phone line, there's booming business in outdoor booths!

Today you'll find convenient Reynolds Aluminum Outdoor Telephone Booths filling a fast-growing demand for paystation *accessibility* outside shopping centers, gas stations, sports arenas and stadiums, new housing developments, busy vacation areas . . . other high traffic points.

The reason—Reynolds bright, roomy booths *attract* business day or night. They're "open" 24 hours a day. Well lighted, perfectly ventilated, featuring ample shelf room, they flag down off-hours traffic when indoor paystation locations are closed.

And talk about ease of setting up Reynolds outdoor booths. Erected booths weigh only 345 pounds; moving or relocating them is a breeze. All-aluminum, they are lightweight, cool in summer . . . never rot, crack, warp or decay. **Now, completely assembled booths available at reduced prices.** *Write for specifications and prices. Address: Reynolds Metals Company, Richmond 18, Virginia.*

**OFFER MANY ADVANTAGES**

- Rustfree—Weatherproof
- Portable—Easy to Set Up
- Perfectly Ventilated
- Roomy, Clean, Convenient
- Easy to Maintain
- Weigh only 345 lbs. Erected

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

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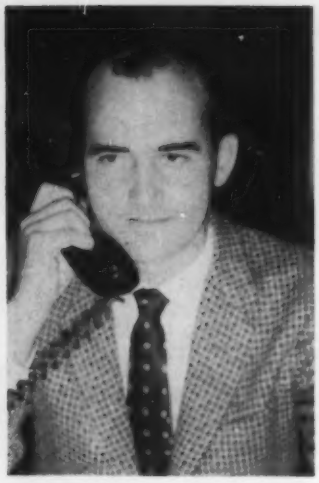
# COMPLETELY ASSEMBLED OUTDOOR TELEPHONE BOOTHS



# Carrier Maintenance and Test Gear

By PAUL E. MURPHY*

*(A Plant Conference Address)*

WITH THE advent of the nationwide toll dialing plan, with its Direct Distance Dialing (DDD), the SAGE (air defense) system, with its required special services and facilities, and with the multiplicities of other special services and facilities being requested by users of telephone company communications networks, comes the necessity of well-designed facilities. Of equal, or perhaps even of greater importance, is the necessity for well-maintained facilities, facilities maintained to their design requirement.

The necessity of well-maintained facilities in the art of nationwide toll dialing stems from the fact that, in many cases, there will be no operator present to observe and to assist in reporting trouble if it should occur, especially when the customer may be direct dialing; that the necessity of well maintained facilities in the special services may be one of necessity to the traveling public, or of defense interest, as are the conditions of FAA and SAGE.

A major portion of the interexchange facility requirements will be derived through the use of carrier, either superimposed on open wire, cable, or radio facilities. If we are to use carrier apparatus to fulfill these facility requirements, adequate maintenance and test gear must be obtained, and adequate test procedures must be adopted to establish and maintain facilities.

During this presentation, I would like to elaborate on some of the more common test procedures and test equipments adopted by Telephone Services, Inc., in the maintenance of carrier facilities.

First, let us discuss various tests performed in determining whether or not a carrier facility is functioning properly, and whether or not actual alignment and trouble-shooting of the carrier facility are necessary. Tests normally include net loss measurements, channel frequency response measurements, noise measurements, and signaling tests for all types of facilities, with other tests necessary due to the design of the carrier utilized to provide that facility.

### *Net Loss Measurements*

The net loss of a transmission facility is the difference between relative levels at the input and output of the facility. It is usually expressed in decibels (dbs) at a frequency of 1,000 cps.

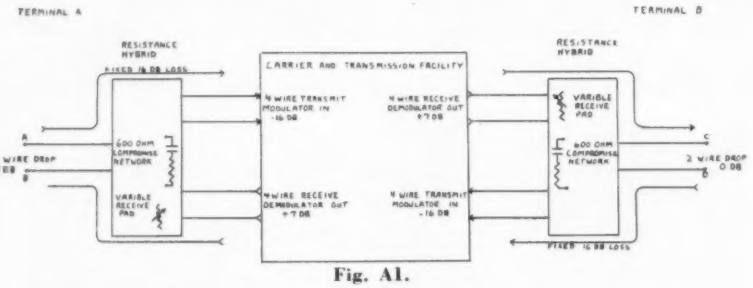



Fig. A1.

It is quite variable and may range anywhere from so-called Via Net Loss for a voice grade facility functioning between two toll centers to —15 db for two and four-wire full period talk services, as determined by the various engineering groups to provide a proper grade of service.

*Fig. A1* illustrates a block diagram of a typical two-wire terminated facility, for which it is desired to determine the net loss. Illustrated are the following assumptions:

(1) That the facility is terminated at terminals A and B.

(2) That the drop connection is at a 0 db point.

(3) That the two-wire drop impedance has been assumed to be 600 ohms.

*Fig. A2* illustrates the required test equipment at the sending terminal of the facility and is shown set-up for calibration. Let us discuss and qualify each component used in calibration:

(1) *The Oscillator.* The oscillator internal impedance should be 600 ohms to simulate the impedance design of the facility at the point of termination or switching. Six hundred ohms is representative of toll terminal impedance design.

(2) *The Calibrating Load.* The calibrating load is an artificial load simulating the impedance of the facility again, 600 ohms.

(3) *The Voltmeter.* The voltmeter illustrated is typical of the vacuum tube type, utilized by the telephone industry for performing carrier maintenance. It is referred to as VTVM, and is calibrated to read in decibels (dbs) relative to a reference of 1 milliwatt of power across 600 ohms. Thus, all dbm references indicate so many db above or below 1 milliwatt across 600 ohms.

Calibration is accomplished by setting

*Mr. Murphy is Superintendent of Electronics of Telephone Services, Inc., Lima, O.

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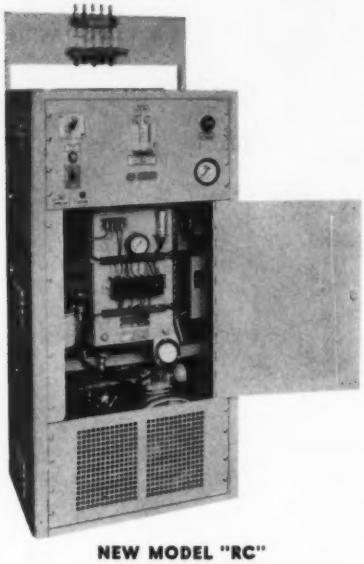
## for pressurizing aerial and underground telephone cables



NEW MODEL "RC"
cabinet mounted

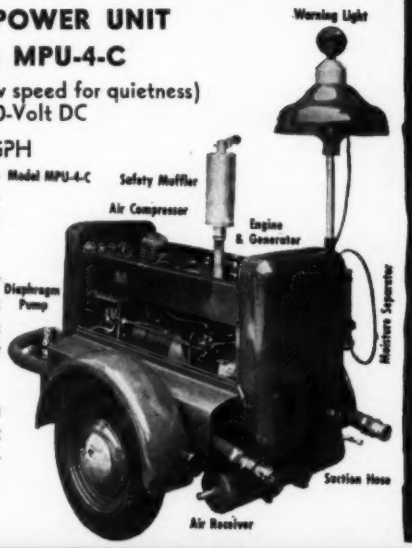
The Model "RC" Dehydrator is designed to supply dry air to telephone cables. Among its many outstanding safety features are:

- Hi-Lo pressure switch for alarm
- Humistat for alarm above 4% R.H.
- Power failure relays and separate fustat
- By-Pass Valve & Alarm for excessive R.H.
- Mechanical control valve for stand-by air supply (O.P.N.) in event of power failure
- Additional safety features on air compressor
- Power supply is 115-volt, AC on the Dehydrator and Air Compressor
- Power consumption—2 AMPS

The Model "RC" and "R" Dehydrators Automatic are designed for small installations of 80 miles or less of cable. The Model "RC" is a floor mounted unit, and the Model "R" is for wall mounting. Operating voltage is 115/220 volts, 1 phase, 60 cycle, and the output is 700 standard cubic feet per day maximum, with a dewpoint of —40°F. and power consumption of 2 AMPS.

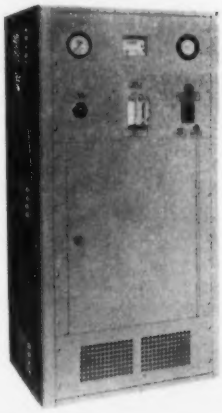
### MOBILE POWER UNIT
### Model MPU-4-C

- Generator (slow speed for quietness) 2500 Watt, 110-Volt DC
- Pump—2800 GPH Diaphragm to remove seepage and drain back
- Air Compressor —to put cables under pressure for cutovers or repairs
- Furnished with or without pump and compressor.




### MODEL "A"
### Air Compressor Dehydrator

Exchange unit equipment designed to supply chemically dry air for telephone cables, aerial and underground, this unit can supply as many as 60 cables. It is equipped with volume recording air meter, high and low pressure alarm switches, humidstat and hour meter.



- Completely automatic in operation
- Air purifier to eliminate oil mist
- Incorporates the latest safety devices

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the oscillator frequency control to 1000 cps, unless otherwise specified, and adjusting the oscillator output control until the VTVM indicates 0 dbm, the power to be injected to the drop of terminal A.

*Fig. A3* illustrates the necessary test equipment at the receiving terminal of the facility. Again, the 600-ohm resistor represents the terminating load which is connected to the carrier drop across which the VTVM is bridged.

*Fig. A4* illustrates the test equipment set-up for actual measurements of net loss.

The carrier input impedance is nominally 600 ohms; thus, the VTVM at terminal A should indicate nearly the calibrated figure, 0 dbm. The reading of terminal B should indicate the net loss. Net loss in the opposite direction is determined by sending from terminal B and receiving at terminal A, following the same procedures.

### *Frequency Response*

What is meant by carrier channel frequency response? Simply stated, one might say it is a graphically plotted curve representing Frequency *vs.* Attenuation in the pass band of a carrier channel. A carrier equipment manufacturer often specifies the channel frequency response with reference to net loss at a frequency of 1,000 cps. A typical example is +1, —3 db, reference 1,000 cps. Net loss—between 300 and 3,100 cps. Specifications such as these are fixed on the basis of a back-to-back connection and represent no line irregularities which may occur in actual practice. *Fig. B1* illustrates a typical response curve.

The importance of determining and maintaining suitable channel response characteristics can best be summed up by making reference to an engineering letter distributed within the AT&T and Bell companies, which lists technical specifications of circuits furnished the CAA for remote control of Peripheral Air/Ground Radio Stations, Control of Vortac, and Air Traffic Communication Stations.

In short, it specifies the following response limits: Reference 1,000 cps net loss, customer to customer, of —8 to —9 db.

| | |
|---|---|
| 300-500 cps loss | —8 to —15db |
| 500-2,500 cps loss | —8 to —12 db |
| 2,500-2,800 cps loss | —8 to —14 db |
| 2,800-3,000 cps loss | —8 to —17 db |

These requirements are most easily met with toll grade carrier facilities, but we must realize that a change in certain components of a facility could send our channel response measurements outside these tolerances and, in short, cause service interruption. Thus,

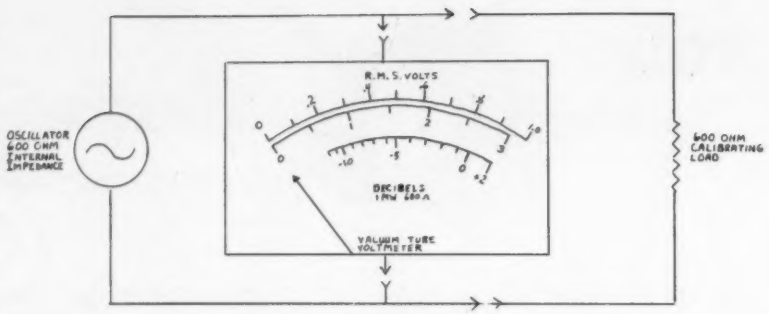


**Fig. A2. Calibration set-up—sending end.**

it is just as important to maintain adequate channel response characteristics as it is to maintain proper net loss.

Carrier channel frequency response measurements are made by following the same general procedures in making net loss measurements, except that loss measurements are taken in 100 to 200-cycle increments from approximately 200 cps, to a frequency where appreciable attenuation differences occur, relative to a reference of 1,000 cps—a frequency where a difference of 10 db or more exists. Observation should also be made between these increments for sharp changes and results recorded.

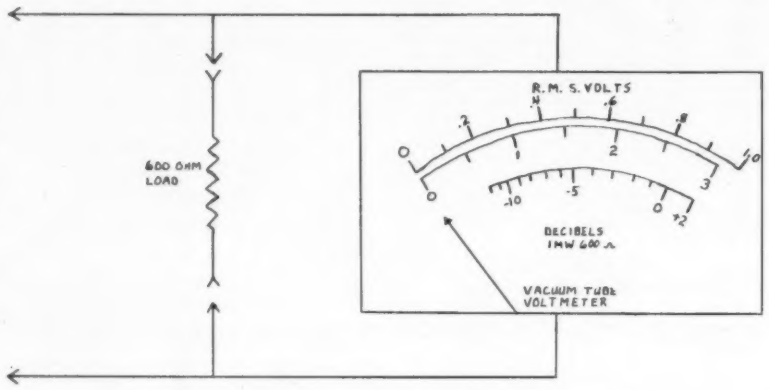


**Fig. A3. Net loss measurements—receiving end of facility.**

### *Noise Measurements*

An important perimeter which must be considered in the evaluation of facility performance is that of transmission impairment created by the amplitude frequency characteristics of noise.

While a small percentage of present-day facilities may require special noise measuring devices, as in the establishment of SAGE data facilities, a major portion of the facilities will be voice grade, and instruments, such as the Western Electric 2B noise measuring set, may be utilized in determining the amount of noise interference present.

Although I have no intention of giving a lengthy dissertation on the fundamentals of noise, I believe that it is in order to discuss the origin of certain terms often referred to during discussions of noise measurement.

Bell Telephone Laboratories, and other large organizations, conducted

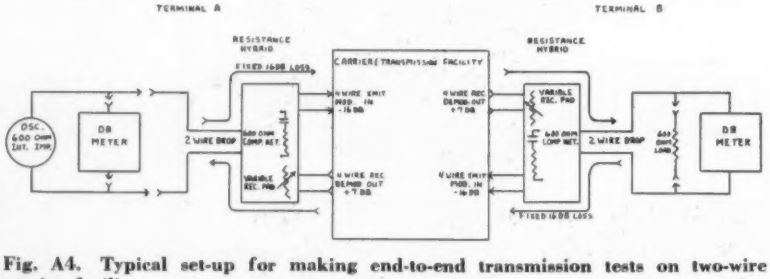


**Fig. A4. Typical set-up for making end-to-end transmission tests on two-wire carrier facility.**

# POWER-INSTALLED SCREW ANCHORS

## average 5 to 8 man-minutes for complete installation

**Latest advance in anchoring technique speeds line construction . . . realizes greater value from investment in hole-boring equipment**

If your company uses power hole-digging equipment for line construction, you can now use that equipment to install the new line of Chance Screw Anchors.

Chance Power-Installed Screw Anchors, ranging from 78 to 176 square inches in area, can be speedily installed in all types of soil, except extremely rocky soil. Your present power boring equipment, regardless of type, can be easily adapted to power anchor installation. Only one new part is needed—the wrench shown below. This wrench transmits torque from the power equipment directly to the specially designed hub on the anchor helix. Since the anchor rod is not subjected to torque, it only has to be heavy enough to support the guy load—a cost-saving factor.

Installation procedure is extremely simple. *Step one* is to remove the Thimbleye or Twineye nut and slide wrench on the anchor. *Step two* is to fasten the wrench to the "Kelly Bar" of the power-digger, or, to fasten the wrench on the pilot bit of the auger using an adapter. *Step three* is to drive the anchor with the power equipment. *Step four* is to release the wrench from the anchor and retrieve it from the ground. (The spring-loaded "dogs" that lock rod in position are easy to release.) *Step five* is simply replacing the Thimbleye on the end of the rod—your anchor is ready for hooking up the guy wire.

These five steps are accomplished in a matter of minutes. Repeated time tests in various types of soil prove that Power-Installed Screw Anchors averaged only 5 to 8 man-minutes for a complete installation *—from the time the equipment was moved into position until the anchor was ready for the guy!*

THE ONLY PART NEEDED is this special wrench. (Diagram shows how it fits the anchor.) Wrenches are made to fit all popular makes of earth-borers.

THIMBLEYE and TWINEYE guy-wire nuts are available. They distribute pulling stresses uniformly and keep guy wire from spreading, kinking, or bending.

SHARP CUTTING HELIX of high strength structural steel is tapered to minimize earth disturbance. Special hub fits lower part of wrench. CA59-23A

### PULL TESTS PROVE HOLDING POWER

During the engineering and development stages of these Power-Installed Anchors, several hundred tests were made to check the anchoring dependability of power-installed screw anchors. Each anchor was pulled by a mobile testing unit to determine maximum holding power. Complete test data is given in Bulletin 868. Address your Bulletin requests to . . .

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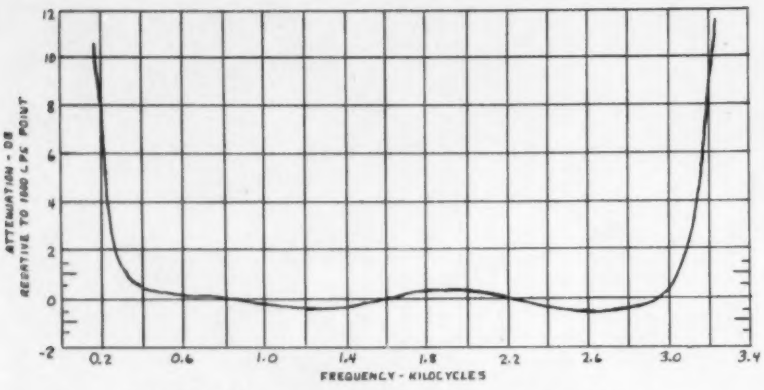



**Fig. B1. Channel transmission frequency characteristics.**

considerable research to determine the interfering effect of different frequencies imposed on a special telephone hook-up. A large number of listening tests were conducted by different persons, using the same apparatus, while different frequencies were injected at a particular level. The tone was then removed and a 1,000-cps tone, injected and adjusted until the same relative interfering effect was observed. The results were then plotted as a curve, as shown in *Fig. C1*, and is referred to as a Weighting Curve. Since these

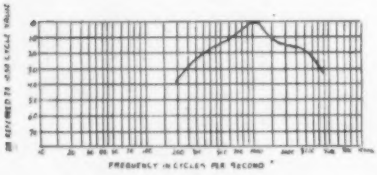


**Fig. C1. 144 line weighting.**

early tests were performed using the Western Electric 144 handset, we refer to it as a 144 Weighting Curve.

What has this to do with noise measurement? Simply, that the interfering effects of different frequencies are relatively different. For example, using 144-line weighting, if two different frequencies, let us say, 500 cps and 1,000 cps, were injected in a facility at some point, and at the same level, the interference of the 1,000 cps would be approximately 15.5 db greater.

It was further determined, that at a frequency of 1,000 cps, a level of —90 dbm was at the threshold of interference, and, thus, was selected as the reference power. All other interfering noise powers would be greater than this reference and would be expressed in dbrn, or decibels above referenced noise.

Since these early tests, the Western Electric Co. developed its FIA handset, and has since developed a representative weighting curve. This curve is shown in *Fig. C2*.

Further tests also indicated there was a 5 db improvement over the older type 144 handset. As a result, the reference had to be modified. It was necessary to consider a frequency of 1,000 cps at —85 dbm as the new reference, and all interfering noise powers would be positive relative to this new reference, or so many db above reference noise adjusted. The new unit was designated dba, or decibels adjusted.

With information provided by these curves, artificial weighting networks were constructed and incorporated into a noise measuring set, the Western Electric Type 2B. Other manufacturers have placed on the market similar networks which may be adapted to a VTVM, as was previously discussed, to allow its use as a noise measuring set, and in general, they do a satisfactory job. *Fig. C3* illustrates a typical set-up for measuring noise.

The VTVM, into which the weighting network is inserted, is calibrated to an entirely different reference than the 2B noise measuring set, but since the two instruments are calibrated in decibels (dbs) above or below a certain reference tone, comparative analysis can be made. For example, a —85 dbm indication on the VTVM using FIA weighting, is comparative to 0 dba on the 2B set. Likewise, 85 dba on the 2B noise measuring set is comparative to 0 dbm indication on the VTVM, using FIA weighting. To convert a reading taken with a VTVM, using FIA weighting, it is necessary to use the following formula:

dba = 85 — reading of VTVM ± insertion = gain or loss of the network ± manufacturer's constant or correction factor.

One manufacturer lists this correction factor at + 2db, and an insertion gain is specified at +10 db.

If, for example, the VTVM as illustrated in *Fig. C3* would indicate —50 db, the conversion to dba would be calculated as:

dba = 85 —50 (— the VTVM reading) —10 (the insertion gain of the network) +2 (the correction factor), or 27 dba.

It must be pointed out that readings in dba are normally referred to a zero level point in the facility. If measure-

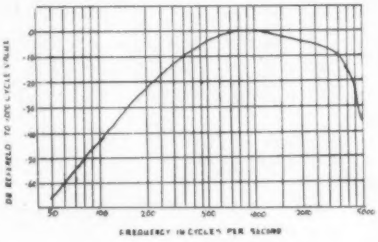


**Fig. C2. FIA line weighting.**

ments are taken at a point in the facility other than zero level, then correction must be made.

If, for example, the noise was measured at the + 7 level, the noise would be 7 db greater than the 0 db level and, thus, to make reference to the 0 db point of the facility, 7 db would be subtracted. The previous example of the formula becomes:

dba = 85 — 43 (the VTVM reading) — 10 (the insertion gain of the network) + 2 (the correction factor) — 7 or 27 dba, same as before.

In nationwide toll dialing, present standards dictate objectives are for an average noise of approximately 30 dba for more than 50 per cent of the time

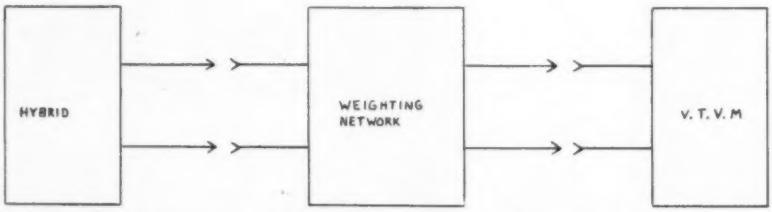
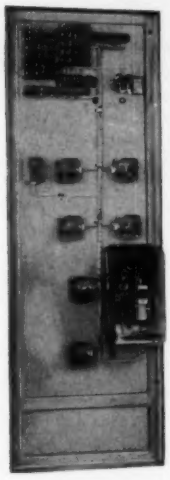



**Fig. C3. Typical set-up for measuring noise on carrier channel two-wire.**

# ESCO RINGING EQUIPMENT



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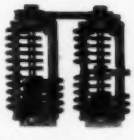

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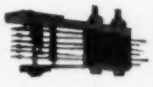

Screw adjusted pile-ups

Permanently aligned drives

**ADDITIONAL ESCO FEATURES (details in future ads in this series) explain why ESCO components are included in the installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard Supply Co., Leich Sales Corp., Stromberg-Carlson Co.**

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for an entire link. Some services may require better noise performance; however, some may not be quite as stringent.

### *Signaling Tests*

In many carrier systems, circuit design provides for signaling on a ringdown or dial basis. The manner in which this arrangement is made possible varies with the system, but the end function remains the same—to activate a drop or light in ringdown operation or to pulse a relay actuated mechanism in dial operation.

Many of the toll carrier facilities, presently being placed into operation, are being arranged for E and M signaling, over which pulse-type information is transmitted.

In the maintenance of these carrier facilities, signaling tests are required to ascertain that little distortion is being introduced during transmission. The Western Electric 2B signaling test set, or similar apparatus, is often utilized to determine this condition. It may be used as a pulse sender, or to measure the distortion of impulses derived from another source. In typical operation, the source of impulses is adjusted to the desired characteristics, connected to the "M" lead at one terminal, and at the distant terminal, a test set may be connected to the "E" lead so as to measure these incoming impulses.

While many carrier facilities are capable of following pulse rates up to 20 pps, as used for crossbar and panel-type systems, the normal pulse test rate for other types of switching apparatus is approximately 12 pps. Also, for E and M type signaling, a normal 58 per cent break pulse is applied to the "M" lead from an associated trunk, while the carrier facility is adjusted to provide 58 per cent break impulses to the "E" lead of a distant trunk. During routine testing, distortion in the order of 2 to 3 per cent is permitted, while greater error must be corrected.

In many instances, carrier facilities will not meet the expected performance tests. It then becomes necessary to determine the cause of failure to meet these objectives.

Manufacturers of carrier equipments provide adequate material on the installation, line-up, and maintenance of their equipments. By following the step-by-step line-up procedures, troubles are readily localized and corrected.

*Fig. D*, in part, shows a block diagram of a typical open wire, single sideband, suppressed carrier toll channel, being utilized for short-haul application. Shown is the transmit section of terminal A and the receive section of terminal B, including respective signaling transmit and receive sections. In order to simplify, the transmit section of terminal B and the receive section of terminal A have been omitted.

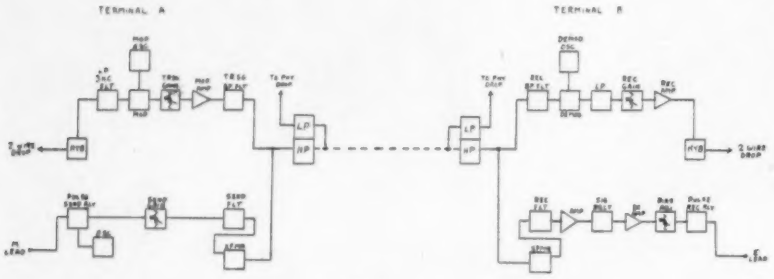


Fig. D1.

In general, the following steps are required in lining-up the typical carrier channel:

(1) Adjustment of power supply voltages.
(2) Adjustment of oscillator frequencies and setting of the oscillator output levels.
(3) Setting of transmit power of the signal and carrier sections.
(4) Setting of receive output to obtain desired net loss.
(5) Adjustment of signal receive section to obtain proper signaling requirements.

These are the basic steps. To discuss these steps would be beyond the scope of this paper. For the present, I must leave the details to the maintenance people and their ability to read. The material is available.

The use of carrier to provide the services being requested by telephone users is ever on the increase. Satisfactory performance is engineered into these facilities, but it is up to the maintenance people through routine testing to see that this "engineered-in" performance is kept, in short, to see that these users are pleased with our service. Service is our product, we have nothing else to offer.

## Hollingsworth Elected to Head Gus Lane Chapter ITPA

The Gus Lane Chapter of the Independent Telephone Pioneer Association held a meeting during the convention of the Arkansas Telephone Association on Sept. 15 in Hot Springs.

Officers elected are T. B. Hollingsworth of Stuttgart, president; Louis V. Ritter Jr. of Marked Tree, vice president; and Jeanice Falls of Russellville, secretary-treasurer.

Board members elected to one-year terms are Carl Moore of Harrison, J. D. Garrett Jr. of Lewisville, Robert Akers of Wilmot, and R. D. Tucker of Crossett.

An early morning breakfast meeting was attended by approximately 96 members and their guests. Entertainment was provided by the Van Patter Quartet, a Hot Springs vocal group.

## GT&E Announces Corporation Personnel Changes

William L. Heston Jr. has been appointed marketing & sales methods & results supervisor for General Telephone & Electronics Corp.

Mr. Heston formerly was merchandising supervisor for General Telephone Co. of Indiana.

Charles A. Crain has been named training and recruitment supervisor for General Telephone & Electronics Corp. to replace Gerald S. Storrs, who will transfer to General Telephone Co. of Michigan.

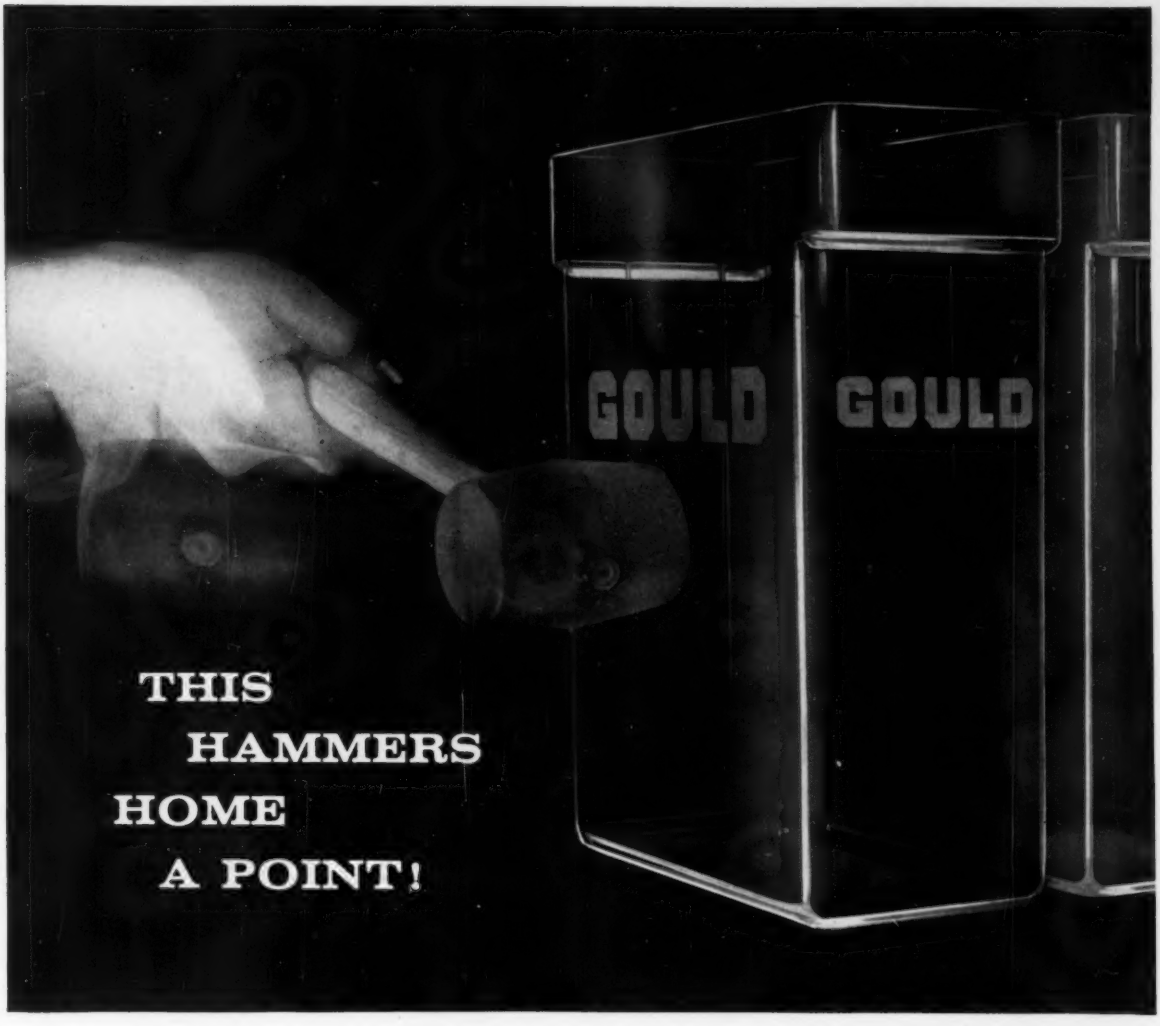
Mr. Crain formerly was director of personnel for the Midwest companies of the General System.

## Uruguay Gets $8.8 Million Loan For Service Expansion

An agreement under which the Development Loan Fund will lend up to 8.8 million dollars to help finance expansion of telephone facilities in the Montevideo area of Uruguay was signed on Sept. 3 by the United States.

The loan is being made to the Administration General de las Usinas Electricas y los Telefonos del Estade (UTE), an autonomous government enterprise which operates the country's electric power and telephone services.

A total of 52,000 applications for service — 46,000 in Montevideo — are pending in Uruguay. The project, assisted by the DLF loan, plans to increase the operating capacity of the Montevideo plant. It will finance purchase of C. O. equipment, spare parts, power equipment, cables, telephones, underground conduit, etc.




# Gould Stationary Battery Jars are Practically Indestructible

New Stationary Batteries in Plastrite Jars offer the same long life for which Gould has always been famous.

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*More Power to you from* **gould**

# Report of USITA Traffic Committee

By D. A. PERIGO, *Chairman*

THE RESPONSIBILITY of the (USITA) Traffic Committee is to "consider general problems pertaining to traffic and particularly the improvement and standardization of traffic operations of Independent companies."

All members of the Traffic Committee met in Washington, D. C., in June of this year to arrange a program for the annual Traffic Conference of the national convention. The committee is proud to present the program which resulted from that meeting.

The committee discussed other matters affecting traffic operations as follows:

Direct Distance Dialing (DDD) is an important development in the art of telephony, but there are many aspects which should be studied by each individual company before jumping into a DDD program. Consideration must be given to the receiving of DDD calls. Included in this part are the costs of 7-digit numbering, satisfactory intercept service, and the number and quantity of trunks.

The originating of DDD traffic requires expensive equipment. The savings in traffic and accounting expenses must offset the maintenance and the expenses associated with investment—principally depreciation and taxes. This committee urges each company to make detailed studies of the economic feasibility before ordering DDD equipment. There will undoubtedly be a time when DDD will be demanded by the public just as local dial has been. For the next few years, however, this committee feels that DDD should be established on the basis of economics and for growth.

The mark-sensing of toll tickets is a subject which is being reviewed by a sub-committee of the (USITA) Accounting Committee. We believe it is still experimental. This item is closely associated with DDD—especially from the accounting angle. The committee believes that development of DDD equipment, which will permit operators to access the timing and ticketing equipment, will shortly reduce the necessity for mark-sensing to such items as credit tickets, trouble reports, etc. The committee does not discount mark-sensing as an art, and believes it has many advantages for a variety of jobs in our industry.

The committee discussed the desirability of having the American Telephone & Telegraph Co. keep us informed of proposed changes in operating practices, so we may make our position known in advance of the time practices are placed in effect. This problem was referred to our association's Washington office and we are glad to report we have already received some proposed changes from the AT&T.

Your committee discussed also traffic engineering, efficiency of operation, management development, and customer relations. The committee was in unanimous agreement that these items should be discussed at the national convention and they have, therefore, become the program for the Traffic Conference.

## Build Growth Atmosphere

"It makes little difference what field of human endeavor we consider, whether it be science, the arts, the spiritual disciplines, or the secular affairs of men, our progress will depend on the maintenance of an atmosphere which will foster individual effort at its maximum level. It seems to me that such an atmosphere has two essential components: first, a maximum of opportunity for individual self-expression and, second, a maximum of incentives for achievement."—CRAWFORD H. GREENEWALT, *Human Achievement and the Free Society.*

## Economics, Important Subject

**Not to teach children basic economics, the *Industrial News Review* warns, is to produce a generation of people who know little and care less about our country's economic structure, people who would be "lost in fogs of misunderstandings and plain ignorance," and therefore possible prey to totalitarian thinking.**

**The *Review* presented the thoughts of an educator on the subject. Dr. Roscoe L. West, president emeritus of New Jersey State College, says to those who oppose teaching fundamental economics to very young children: "Economics is considered a difficult subject. Anatomy is also considered a difficult subject, but our schools still teach such related subjects as hygiene, sanitation and first aid. In both fields, the student should be given sufficient knowledge to take care of himself."**

**Dr. West continues: "Economics can be made a regularly taught subject starting with kindergarten." A trip to see a train may be tied in with the story of how railroads serve the community, for instance.**

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**THE PTW POLAR RELAY, for instance...**

Lenkurt Type 23A Datatel telegraph carrier equipment incorporates advanced design features that provide wider latitudes of operation.

For instance, each 23A loop unit employs a PTW polar receiving relay that has a number of advantages over electronic keyers. Its use permits various polar arrangements without requiring an external repeater; it allows back-to-back operation, either half- or full-duplex; and because the relay introduces no voltage drop, there are fewer restrictions on loop length.

In addition, the PTW polar relay has a significantly superior maintenance-free life. It has 3/16" tungsten carbide contacts that are immune from pitting and contact build-up, and features an Alnico permanent magnet that retains its flux indefinitely.

Type 23A has the added advantage of being fully transistorized. Dissipation is only 2.5 watts per channel, and the equipment can be operated directly from any 48-volt d.c. source. A multimeter and VTVM are normally the only test instruments required for servicing.

For the full story on Lenkurt Datatel or companion equipment, call your Automatic Electric representative, or write Mr. T. B. Collins, Director, Carrier & Radio Sales, Automatic Electric Sales Corporation, Northlake, Illinois.

ALL YOUR COMMUNICATIONS NEEDS FROM ONE DEPENDABLE SOURCE

**AUTOMATIC ELECTRIC** GENERAL SYSTEM

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# The What, Why and How of Traffic Engineering

By DON CHILDERS*

*(A Traffic Conference Address)*

**The time has come, the Walrus said,**
**To talk of many things;**
**Of shoes—and ships—and sealing wax—**
**Of cabbages and kings;**
**And why the sea is boiling hot,**
**And whether pigs have wings.**
***—Through the Looking Glass***

LIKE THE Walrus, your (USITA) Traffic Committee thinks that the time come has come to talk of a wider variety of things, and has decided to add to the talks of administrative functions, which have occupied the majority of the time in the past, a discussion of the function of traffic engineering.

Traffic engineering can hardly be classed as a new or novel function in the traffic department, but it can certainly be rated as one which has continuously grown in importance, and for which the future looks bright indeed. With the rapid developments now taking shape in the various laboratories, especially in switching techniques, I do not hesitate to predict that we will find ourselves hard pressed to keep our traffic engineering practices up-to-date. I am sure I hardly need to predict further that we shall need to be prepared for this by recruiting and training personnel whose technical skills and managerial potential are of a high order.

Just what sort of technical skills are required of the traffic engineer? Are they the same as the electrical or mechanical engineer, or are they something special? Perhaps a good way to answer this question is to look briefly at the history of this job.

As soon as the early telephone exchange became something more than a "one-man show," the job of completing connections was an obvious candidate for assignment to a specialized work force, and the traffic department came into being. It seems logical to assume that with the arrival of the first service complaint thereafter, the traffic department was handed responsibility for quality of service.

If we look at the operating job more closely, however, it is obvious that the responsibility for service quality would have belonged there, with or without a complaint to start it off. It is one of the duties of any department to do its job with a minimum of expense, and this includes salary expense. But in traffic, saving of salaries by cutting forces may easily result in poor service. Thus, traffic management is called on to answer the question: "What is the minimum number of operators we can provide and still give our customers a satisfactory grade of service?"

After determining what makes a satisfactory service, we then find ourselves investigating many by-paths. Some of these are matters of equipment design and its effect on the amount of work that an operator can perform in a given time; others are concerned with statistical measures, estimates, and distributions of traffic, both in time and in space.

The design questions are, to be sure, common enough engineering problems, and while their origins are properly in the traffic departments, their solutions are worked out, more often than not, in cooperation with the engineering departments and the laboratories of the manufacturers. The statistical problems, on the other hand, are unique to the traffic department. For practical reasons, our traffic data and estimates are nearly always expressed in averages, yet the traffic we deal with arises from a multiplicity of individual sources each acting more or less independently of the other.

Under these conditions, the precise methods of the accountant, or the mechanical engineer, will not work, and we must turn instead to the more abstract methods of the statistician and the mathematician. By these methods, we manage to infer—and with a high degree of accuracy, too—what are the optimum specific solutions to our problems, based on data expressed in averages. So far as I am aware, the nature of the problems, and the methods of solution, are not duplicated or approached in any other branch of the industry.

Thus, the traffic departments find themselves with a definite engineering function to perform. To meet the equipment design requirements, the men doing the job should be familiar with manual skills and ingenious in providing equipment arrangements to permit such skills to be used to best advantages. To solve the problems of traffic capacities, they should have a strong mathematical bent and some familiarity with statistical processes. All of these are, of course, engineering skills.

You may have noticed that what I have said up to now has been based on manual operations, and you may have questioned whether it would be valid for machine switching operations. It most certainly is. Our primary interest is the adequacy of traffic facilities, and from a purely engineering standpoint, there is very little difference whether we express this in terms of the availability of operators, circuits, and positions, or in terms of the availability of switches and trunks.

Now that we have looked at the origins of traffic engineering, we feel that we can safely attempt a broad defini-

*Mr. Childers is Connecting Company Agent of United Telephone Co., Kansas City, Mo.

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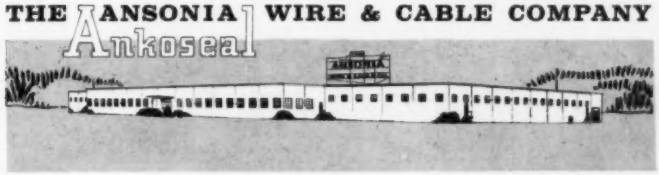


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tion, and we therefore submit the following:

Traffic engineering is responsible for recommending quantities and arrangements of central office and trunk equipment which are adequate to enable the customer to reach the called party easily, quickly and surely. This includes considerations of numbering plans, local and toll switching arrangements, the number of paths and switches and the balance of traffic in dial units, the adequacy of toll circuits and manual switchboard equipment, arrangements for intercepting and information, etc.

In order to point out that there is no conflict between the above responsibilities and those of the general engineering department, we should understand that the latter is chiefly responsible for what we might designate, for the convenience, the technical aspects of the equipment layout. These would include items such as grade of transmission, economical floor layouts in equipment rooms, adequate power supplies, provisions for testing and maintenance, and the preparation of work orders and specifications for the suppliers.

Returning now to our definition of traffic engineering, let us see if we can break these basic responsibilities down into specific activities or sub-functions. We would hold it to be self-evident that the first of these is —

*Planning.* Certainly, no activity is going to proceed in an orderly manner without some kind of forward planning, and in the telephone business, this is of utmost importance, since without planning there can be no responsible budgeting of capital expenditures, and without such budgeting it is most unlikely that there will be adequate financing to meet the demand for an expanding service.

Within the limits of our traffic engineering responsibilities, what sort of planning is required? First, there should be cooperation with the general engineering people in preparing long-term fundamental plans, including toll centering plans, intertoll dialing plans, numbering plans, local, interoffice and toll switching plans, etc. Second, traffic engineering should determine the dates when specific jobs are required for relief, etc., the amount and types of equipment needed, and should cooperate with general engineering in setting up time schedules for the various activities to get the jobs completed.

It should be noted here that the basis of all planning for growth and development is a reliable estimate of future demand. This is usually provided by commercial engineering, and the cooperation of this group, not only at the start of planning but also throughout the procedure, is much to be desired.

Somewhat akin to planning is the activity we shall designate as —

*Economic Selection.* As we all know, perhaps too well, there is often more than one way to do a job. The choice between alternatives is usually a plain matter of dollars and cents arrived at through comparative studies. In most organizations final authority for economic selection is given to the chief engineer. However, traffic engineering has the responsibility of assisting by providing estimates of equipment quantities required and of operating costs under the various plans.

**Left to right: J. T. Thomasson and T. C. Thomasson, both of Lancaster, S. C.; R. V. Achatz of Aurora, Ind.; Ted Talmage of Chicago; Loren Linder of Minot, N. D., and Clyde E. Dickey of San Juan, Puerto Rico.**

Traffic engineering will also be called upon to assist in evaluating anticipated service improvements, especially where the value of such improvements is intangible, rather than direct revenue-producing or cost-saving. Examples of these would be items such as improved trunking to reduce lost calls, or conversions from terminal-per-line to terminal-per-station equipment.

In addition to planning and economic selection is a group of activities which we can assemble together under the general subheading of —

*Provision of Equipment.* We have already stated, in our "broad definition," that traffic engineering is responsible for recommending the provision of adequate equipment of optimum types, when and where needed, to provide satisfactory, yet economical, grades of service to the customer. Such recommendations are usually in the form of "Traffic Orders" which pass through lines of organization for review and approval by designated officials. A common arrangement would comprehend approvals by the general traffic manager and chief engineer, with final authorization by the president or operating vice-president to proceed with the work.

The provision of equipment is, however, something more than just the preparation of Traffic Orders. Related activities include collecting and analyzing data on past and present traffic volumes and distributions, and from these, preparing estimates of future traffic, which in turn provide the bases for the Traffic Orders, or specific recommendations for equipment additions, rearrangements, and modifications to provide a given grade of service. As a part of this work, traffic engineering will also participate actively in the decisions which fix the grades of service to be used as engineering objectives.

Traffic engineering will also keep in touch with the progress of projects which they initiate, to see that service is adequately protected during installation, and that if major changes occur in demand after the original orders are issued, corresponding changes in the equipment to be provided are made as soon as is practicable.

Up to now, we have listed activities specifically related to additions and changes in the equipment. There are other activities which take place both in growing and static situations, and which come under the heading of —

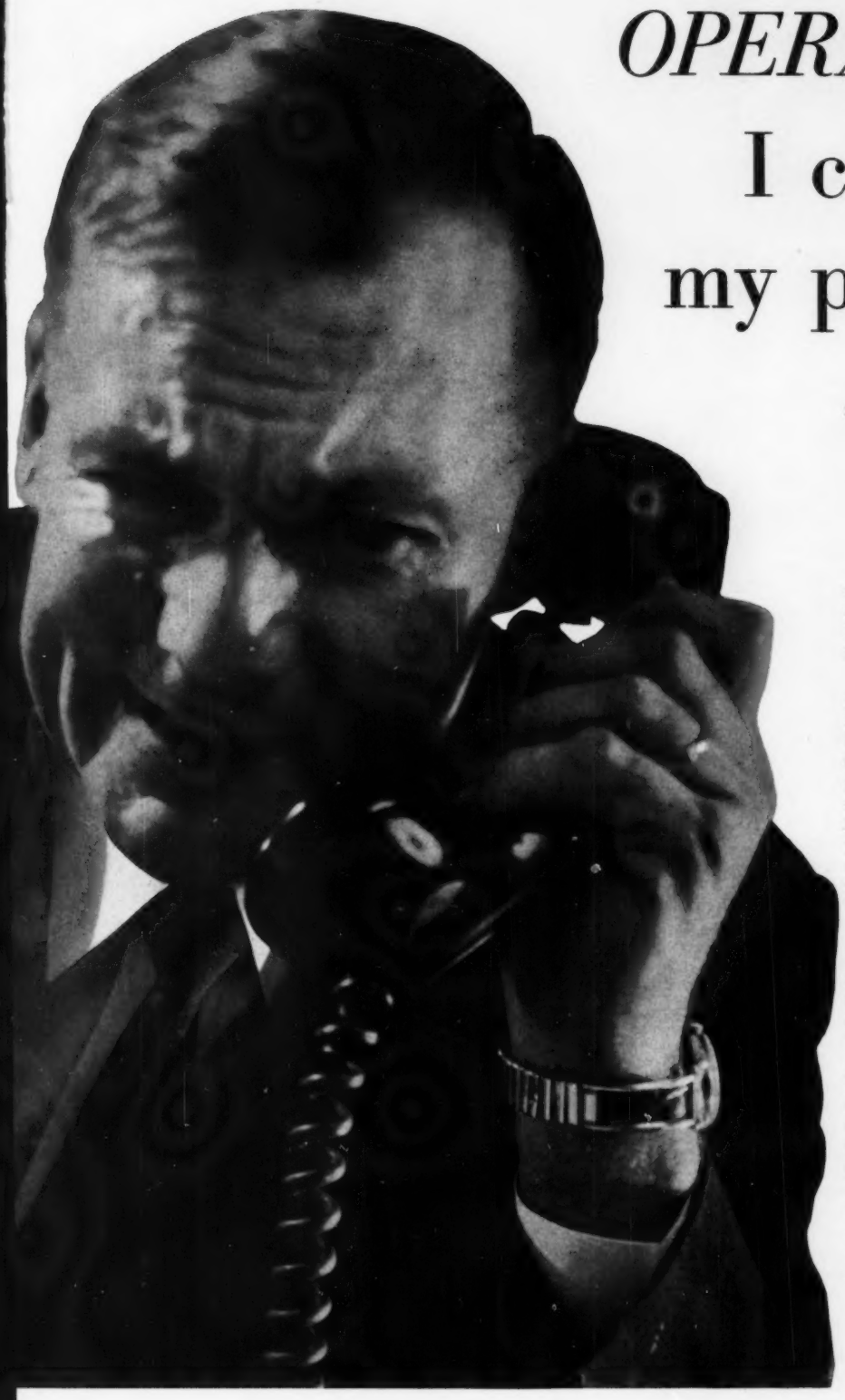
*Administration.* Principal examples of administrative engineering duties are trunk administration, and trunk and line assignment. Trunk administration consists of studying past and present trunk and toll circuit usage, estimating future requirements, and adjusting the number of trunks and toll circuits to provide for the flow of traffic. Routing considerations are, for obvious reasons, an integral part of this job.

Trunk and line assignment consists of specifying the location of trunks and subscriber lines in the equipment in such a way as to insure ease of operation and optimum distribution of traffic loads. These may be duties of traffic engineering, or they may be done by field forces. Wherever done, they are based on traffic engineering studies of load balance.

Finally, there will be a group of responsibilities, not necessarily minor ones either, which we shall consider as —

*Other.* For the most part, these are responsibilities which are carried out in cooperation with other departments. Included are items such as cooperation with the traffic field forces and the general engineering department in arranging for adequate space for traffic quarters, including operating rooms, lounges, locker rooms, quiet rooms, cafeterias, etc., and in seeing that safety conditions, privacy and protection of personnel are adequately taken into account.

Certainly not the least of the "other" duties of traffic engineering is to coordinate collecting and summarizing the traffic studies which are such a basic part of your company's separation studies for division of revenues and for rate cases. I am sure that you are very much aware—but still it needs



# *OPERATOR...* I can't hear my party!

"Do something, operator! This is terribly important . . .

> *Biggest deal I ever had . . . how's he reacting to this new pitch? . . . maybe he thinks I'm scared, or stalling every time I say, 'please repeat that.'"*

Yes, my friend, you have every reason to be mad. But you have also put your finger on the answer—right there in your last thought: *please repeat that.*

Telephone companies are forestalling your outburst—taking angry subscribers off their backs by adding some kind of repeatering device to their circuits. They are fully aware that the public demands quality transmission and that repeaters are the simplest, least expensive approach. They want you to keep on making your important sales calls by telephone—they like the revenue.

### *Can't Miss a Thing*

When you placed this toll call, Mr. Salesman, you knew what you wanted: first, to *understand* everything that was said; second (and perhaps even more important in your case), *how* was it said—what was your client's reaction? If you were talking to him over a desk, every little change in facial expression or movement of his hands would be a signal: should you try to wrap up the deal now, or back off and try a new tack? In a telephone conversation, however, only your ears can guide you—and that is essentially transmission. At its best, a telephone call brings you as close to your listener as Fall is to

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Winter on December 20th. You can hear the quick intake of a breath; the subtle change in voice register that permits you to form opinions and take your cue from there. When you have this type of transmission, you'll make a lot of these important calls by telephone.

### *Two-part Solution*

Transmission quality is a function of two elements: the line and the terminating equipment. Fortunately for many Independents, great strides toward better quality input and reception came with the introduction of the Stromberg-Carlson 1500-W Series (500 Type) instrument, just as these companies converted to dial (and consequently ordered new station equipment). These high-gain, balanced-impedance instruments, with improved transmitter and receiver capsules and shorter handsets, ensured transmission of acceptable quality *at the point where it enters the line*. That was half of the answer.

Repeaters are used to maintain an improved signal-to-noise ratio over the entire length of the circuit, so that the improvements in quality at the source will pass without degradation to the called party's instrument. It is a matter of overcoming various cumulative losses peculiar to each circuit; it is *not* amplification *per se*.

The idea of repeaters is not new, as applied to toll circuits. With greater standardization of conductors and an easily calculable loss pattern, they have been in use many years. However, real enthusiasm for repeaters on inter-exchange and terminating circuits came quite recently with the refinement of electronic components, transistorized circuits, printed wiring cards, as found in the Stromberg-Carlson 541 Repeater.

### *No Additional Cost*

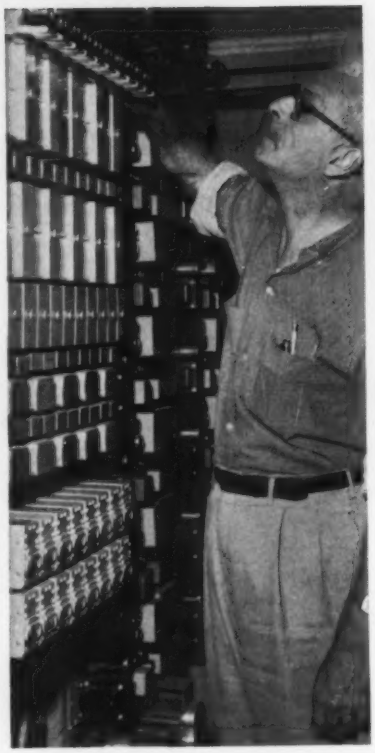
Assuming that quality transmission is the present obligation of each telephone company, the means for accomplishing this must be weighed. What is still surprising to many is that a complete justification for the investment in repeaters can often be found in the savings obtained by using smaller gauge conductors to achieve the same quality circuits. The desired improvement on new circuits is thus obtained at no additional cost—sometimes at a net saving. Similarly, when losses on present facilities are to be recovered, the moderate investment in repeaters compares most favorably to the higher cost and time considerations of rebuilding lines.

### *Choice of Equipment*

Stromberg-Carlson offers two types of repeaters. The *551* Hybrid Type Repeater is especially recommended for open wire circuits, for mixed facilities (open wire and cable in various sizes), and wherever a substantial gain is required. The *541* Negative Impedance Repeater provides this improved transmission under less demanding conditions. It is normally applied to cable (loaded or non-loaded). Compact (8 repeaters in 3½" of 19" rack), transistorized, and using interchangeable printed cards, equipment operates off office battery with a low power consumption of only 1 watt. Now a housing is provided so that the 541 Repeaters can—if desired—be installed on crossarms, permitting installation at the more efficient electrical mid-point of the line.

The *551* Hybrid Repeater is an assembly of various standard components having a wide latitude for handling any requirement. Each installation is job-engineered to provide just that combination which will most efficiently provide the necessary gains.

The *541* Negative Impedance Repeater is provided in standard packages for both Series and Shunt type, sometimes used separately and often in pairs. Strapping options meet the individual customer's line characteristics.

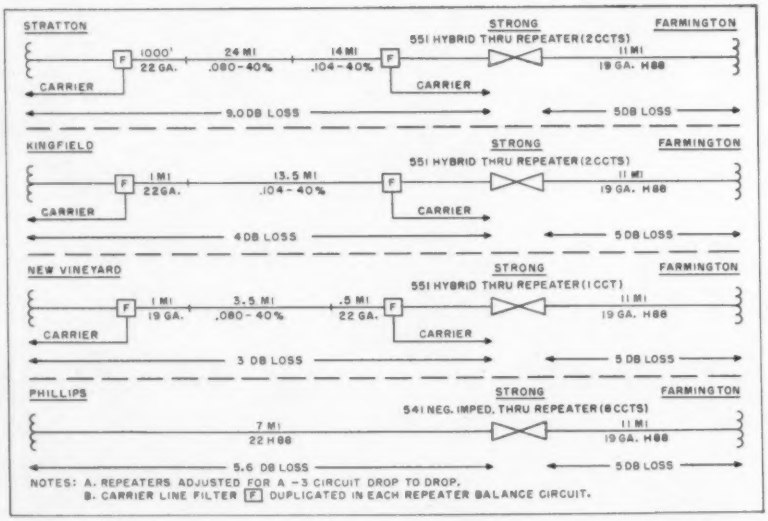


**Mr. Kenton Quint of North Anson, Maine, likes to get 100 cents' worth for each dollar. He also knows the importance of good service, with a larger company "looking over his shoulder." In placing Stromberg-Carlson 541 and 551 Repeaters in his Strong exchange, he satisfied himself and his customers.**

### *Increased Revenue*

Toll calls present potent profit possibilities. Incorporating most of the advantages of costly face-to-face meetings, they are gaining in popularity wherever improved transmission "brings the two parties into the same room."

The means for this improvement in transmission quality—the repeater—is readily available and economically justifiable. Telephone companies in increasing numbers are taking steps to insure that these revenue-producing calls will increase in number.




**Stromberg-Carlson repeater installation by Kenton Quint at Strong, Maine — a typical application.**

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repeating for emphasis—that your whole profit position as a company may well depend on the accuracy of the separation data which you furnish to your chief engineer for his cost studies.

To summarize, then, the sub-divisions of the traffic engineering function consist of the five items:

Planning.
Economic selection.
Provision of equipment.
Administration.
Other.

And, that's the story. For reasons which must be obvious to you, it has been condensed and a great many of the details of the job have been omitted. Nevertheless, I am hopeful that it has been sufficiently inclusive to demonstrate to you the present and growing importance of your responsibilities in this field, and the need for an adequate and competent organization to do the job.

Let me pause right here and add that when I use the word "competent," I do not limit the meaning of the word to the technical phases of the job. You must have noted that your traffic engineering group, as described here, is a sort of "in between" group, and that cooperation with other departments is an important part of its activities. For this reason, let us be perfectly clear that a very definite part of what we mean by "competent" is the ability to work with others.

One final remark and I shall be through. I wish I could promise you that you can do this job cheaply, but I cannot do so with a clear conscience. The caliber of manpower required to do the job is high, and in demand, so the competition is keen. I would warn against attempting to compromise with less than the best you can obtain, for if you do, it will undoubtedly be reflected in the quality of your service, where the unseen costs can be far greater than the direct costs. More often than not, the technical skill of competent manpower will more than compensate for tangible costs, while the skills of "working with others," good planning, etc., constitute immeasurable intangible assets, and these are the things that keep the seas from boiling and clip the wings of pigs.

**This fivesome from Minneapolis, Minn., are, left to right: G. N. Cornwell, Herman Froemming, Ronald Johnson, Mark Holmes, and Willis Miller.**

## Name Lee Chief Engineer Saskatchewan Telephones

The appointment of S. F. Lee, as chief engineer, Saskatchewan Government Telephones (SGT), was announced recently by the Hon. C. C. Williams, minister in charge of SGT.

Mr. Lee succeeds C. W. Sparrow, who was made manager of operations and engineering for the system. Both appointments were effective Oct. 1.

Mr. Lee joined the engineering department of Saskatchewan Government Telephones on May 1, 1950, following graduation in electrical engineering from the University of Saskatchewan. He has been closely associated with the microwave installation in Saskatchewan and the system's dial conversion program.

He is a member of the Engineering Institute of Canada, of the Association of Professional Engineers of Saskatchewan, and of the Institute of Radio Engineers.

**S. F. LEE**

Prior to entering the university, Mr. Lee served as a major with the South Saskatchewan Regiment in northwest Europe during World War II.

He was born in Prince Albert.

**Left to right: F. S. Barnes of Rock Hill, S. C.; Josephine Poppleton of Tampa, Fla.; Marcus Donaldson of Northlake, Ill., and F. S. Barnes Jr. of Rock Hill.**

## Power Is March of Dimes Co-Chairman in New York

Donald C. Power, the chairman of the board and chief executive officer of General Telephone & Electronics Corp., has been named co-chairman of the 1960 New York March of Dimes, it was announced on Oct. 16 by Gerald M. Loeb, general chairman.

The March of Dimes is now engaged in an all-out attack against birth defects and arthritis while continuing the winning fight against polio.

As co-chairman, Mr. Power will assist in the coordination of campaign activities and help enlist the support of industry, labor, professional, and civic groups.

# Planned Development for Profitable Management

By F. W. HAMPER*

*(A Traffic Conference Address)*

DO WE need a plan for development of management? Is it necessary to constantly harp on this so-called problem area of training? What's wrong with the way we've always operated? We've come this far, why change now?

These are some of the questions that enter our minds from time to time when this strange, new and involved, sometimes complicated, problem of developing management confronts us. No need to turn your back or ignore it, because it just won't go away. It's always been with us and it's here to stay. So, let's face it!

Certainly we need a plan for development. Little if anything is accomplished for very long without some definite plan of action—formal or informal. It is necessary also to have this problem constantly before us and to make every effort to over-come the known difficulties and to remain alert for those that haven't been revealed as yet.

There are many things wrong with the way we have always treated this problem of development. If we have been successful in having individuals ready for promotion, many times it has been purely accidental. If we have had a satisfactory and profitable operation with our present and past methods—how much more profitable might it not have been with improved and better techniques.

It has been said many times by many business leaders much more experienced and qualified than I, that if we are not moving forward we are going backward. It is not enough to just stand still—to do so is to gradually slip and finally lose ground. The competition of other business for potential management is also becoming ever greater—and must be met head-on. Certainly, the telephone industry should not be content to take "left overs" from the employment offices and other industries. Nor do we want to have only "warmed over" management that has been discarded by other industries.

There is another highly pertinent reason why we must face this problem and successfully over-come it—the challenge of progress for the future! Our industry is making tremendous strides in the laboratories, on the manufacturing production line, and more recently in the sales field. Are we really prepared to maintain the pace we have set for ourselves and our successors? I think not. At least not to the extent that will be needed ultimately. Here, again, there is indicated one more good reason for an active well-defined plan for development.

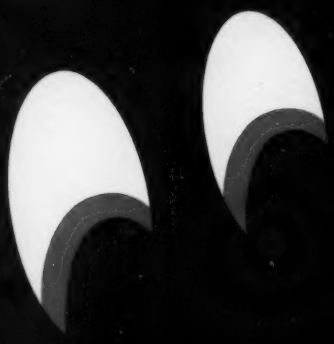
With our 20-20 hindsight we can now see that to some extent we have been blind and have not seen clearly the areas where concentration and alteration would be needed. Also, there has been a tendency to under-rate the pressing requirement for more and better management. You can remember clearly, I'm sure, when the main (and sometimes only) prerequisite for a line foreman was that he be big enough and experienced enough to get the construction program completed. Or that the important qualification for a chief operator was to get along with the girls and watch her answering time. We are expecting and demanding more from the management employe today and, without doubt, will require even more in the future.

It is not enough that he be merely a leader or a supervisor—he must also be a manager in every sense of the word. This means he must have the ability to think and to put such thoughts into immediate action. He must then delegate that portion of his own responsibility that can be done best by his subordinates and then follow-up diligently to see that it is done. In this respect, it becomes imperative that he understand such delegation does not in any way relieve him of his own accountability for satisfactory results. Beside all this, our managers must be capable of analyzing each individual, situation and circumstance to determine what further action must be taken to correct any deficiencies in either work operation, or personnel performing the work. This, then, requires him to be a good instructor and a capable planner. Since he is accountable for results from his portion of the over-all operation, he, then, of necessity, must understand and comprehend the complications of the effect of his actions on the cost and expense of doing business. He must know how to control his functions so that the area for which he is responsible will not exceed the budget that has been developed. This budget is also a plan that he had some part, directly or indirectly, in compiling.

In keeping with his analysis of each of his subordinates, he must get to know them well enough to see that they each get what they need to develop and grow in the organization. Summed up briefly—good management is the intelligent planning of an objective and the successful execution of that plan. This plan must have both short-range and long-range objectives and the execution of it must produce a mutual satisfaction to the employes, the share-owners, and the customers. Nothing short of this will do!

Now, perhaps, it is easier to see why we can not be satisfied with past success (if any), but must move steadily

*Mr. Hamper is Operating Vice President of General Telephone Co. of Ohio, Marion, O.



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and persistently forward with a solid plan for development for present and future managers. The requirements that must be met are rather overwhelming, but not impossible. We can consume this problem just as we have many others in the telephone industry. Once we have determined the size of the elephant, the only thing that remains is to pick out a spot to take the first bite.

Having recognized some of the facets of this difficult situation we must take immediate, decisive, and corrective action. It becomes a matter of developing a plan for maintaining a quality control over the organization. This does not mean merely setting up some kind of "program" with all kinds of magic gimmicks that are supposed to hypnotize everyone into a state of lethargy so that this problem can be easily solved while everyone is anesthetized. It does, however, indicate a real need to create and maintain an attitude throughout the ranks and levels of management that recognizes and accepts the responsibility to stimulate and build men. Each manager must be constantly aware of the need for proper selection, placement, coaching and communication in connection with new and promotable employes. There must be an awareness and willing acceptance of this responsibility.

This is not a new or added function that must be performed. It is just one that has been somewhat over-looked and must now be emphasized to a greater degree. As a business becomes larger, the viewpoint of all management must broaden proportionately. Development of management must, therefore, encompass more involved and elaborate plans than it did when the business was smaller.

More is expected of lower levels of management, because certain responsibility for making decisions must be delegated farther and farther down and closer to the point of action. As this broadening of management viewpoint is spread more and more throughout the organization, the need for greater personal and self-development becomes apparent. Each manager must carefully analyze himself from time to time and determine what shortcomings he has, thereby laying the ground work for future self-development. We must then expose him to the opportunities for improvement, thereby permitting him to take advantage of this and to develop.

In my opinion, a distinction should be made between supervisory training and management development. Supervisory training implies to me the teaching of certain techniques that are necessary to effectively supervise the work of others. It is not necessarily an all-inclusive type of training, but rather limits itself to the more basic fundamentals of getting a job done through others. On the other hand, management development is broader in scope and tends to be all inclusive. It deals more directly with the cause and effect of the inter-relationship in the organization. It recognizes more specifically the trite, but true, statement that no management can expect to be successful as a "one-man show." It takes into consideration the need for a broader range of knowledge and understanding of the over-all management functions —a broader breadth of viewpoint, if you will.

**Left to right: Mrs. R. B. Nawman and Mr. Nawman of Oakland, Cal.; Mr. and Mrs. Robert L. Nawman of Orinda, Cal.**

This certainly implies that each manager must realize that his actions can not be independent of others, but, concerted with others, go to make up the complete effort for successful and profitable operations—here, again, with emphasis on the need for each supervisor to become more of a manager, accepting not only the responsibility, but also the accountability for satisfactory results. This, then, is the climate in which a plan for development can thrive and grow and produce the benefits that are needed for a prosperous future.

Much has been written and spoken about the ingredients that should go into a management development program. As I have indicated before, in my opinion, it definitely should not be tagged with the misnomer "program." I think it should be a plan of action—one that is based on short-range objectives as well as long-range. It should be flexible enough so that it can be bent to fit the idiosyncrasies of the "organization personality," yet stiff enough to avoid the short-comings of the personalities in that organization. It must satisfy the development needs of the organization as a whole, and at the same time meet the individual management requirements to fill holes in the organization. It must be compatible with, and be a part of, each level of management's over-all objective for improved and profitable operation.

How can all this be done? What do you do to accomplish everything that I have indicated is needed? I don't know—not exactly anyway. Furthermore, I am becoming more and more convinced that even the "experts" are confused and perhaps aren't too certain of the exact formula for answering this intriguing problem.

I would like to suggest, however, that a somewhat simple, but practical approach, be taken at this point. It would seem that the first step would be to check with those "experts" who have studied this matter in more detail and perhaps with greater diligence and some success.

I am certain that you will find many suggestions and ideas on this controversial matter. Careful analysis of this whole problem, however, will show you that except for the unpredictable human element, this isn't much different from many of the situations encountered in day-to-day operation — just broader in scope and effect. Many experts have expressed it in more technical terms but it generally boils down to this:

(1) You determine what kind of talent you have in your present organization; get a general idea of who has what abilities and what function each is presently performing; then what functions you may want performed in the future.

(2) You decide what kind of managers you have now by simply measuring what they are presently capable of, and subtracting that from what you feel you require now and in the future; the result will be the development or training needs, as the case may be, of each manager and the requirement for additional management talent.

(3) You then figure out a plan to give to each manager whatever is nec-

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essary to make up his deficiency and, at the same time, follow a course of action that will supplement the organization with adequately developed and trained management for the future.

One of the first things necessary to follow out this plan is an organization chart or some means of showing your organization plan, both on a short-range as well as a long-range basis.

It also becomes obvious at this point that you can not determine what is lacking in your management unless you know what you require. Therefore, a well-defined and understood description or standard for each job is needed. Then, each incumbent can be measured against that standard—both as to his present position as well as others for which he may show potential. This, in itself, tends to improve management over-all because it acts as a stimulus for other planning that is necessary in order to make intelligent estimates and appraisals of future organization needs and requirements.

It provides avenues of promotion and delineates lines of communications and counselling. It also defines the areas of responsibility, authority, and most important, the degree of accountability.

This inventory of management talent will show many things — some good, some not so good. In any case, the evaluation at this point must again take on a rather practical aspect. It must include, among others, such things as a determination of the age of this group. Otherwise, you may have talents or potential that can never be utilized or realized because of time limitations, turnover, retirements or disability. Furthermore, the proper timing of special training and development is important if the individual is to be prepared and ready to be moved into another more responsible assignment when such vacancy occurs. Only careful analysis and forward planning can make this possible.

There also must be built into the organization a method for appraising the performance of each person who is under management surveillance as a potential candidate for consideration for promotion or further development. This can best be done through close and direct observation of the day-to-day performance and attitude of the employe under consideration. This applies to both on and off the job work, where possible. In this connection, also, it should be noted that job requirements or specifications can not remain stagnant or static. They must be reviewed and revised from time-to-time to make certain that they are meeting the constantly changing pattern of telephone techniques.

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tended, over the years, to deal specifically with the proper handling of operator functions. Certainly, there is no objection to this, but it has tended to place greater emphasis on the personal aspects of the operation rather than the physical or equipment function. At one time, this may have been satisfactory. It now becomes apparent however, that with the ever-increasing move toward technological changes in telephony, and the gradual elimination of the human element in certain areas, a much greater emphasis must be placed on making certain that traffic management understands the physical and technical phases of equipment operation. This, then, requires that our specifications for management personnel in traffic be altered to provide individuals who can cope with, and manage the operation from a technical viewpoint. This also is true of many other areas of telephone operations. So, it appears that some of us "old dogs" may have to learn some new tricks. We also may have to look, in some instances, to other sources for traffic management.

This brings up a point that is too important to overlook or ignore. That is the source of supply for future management. If we are to have a successful plan for the development and promotion of present employes, then we must recognize, and make provision for, the replacement of these individuals in the organization. Responsible management must intelligently analyze the specifications for each position and then determine where these requirements could best be met from within the present organization. Then there must be a method of supplementing the over-all organization manpower deficiencies by recruiting, selecting and placing qualified applicants from sources outside the organization. No management development plan can long exist or be successful without a constantly maintained high standard for selection of applicants for employment. This standard must be frequently reviewed to make certain that it has the ingredients to produce a grade of employe of the best quality, and that it is meeting the changing requirement for improvement.

**Left to right: William K. Lineberger and O. B. Lineberger, both of Jeffersonville, Ga.; Mrs. R. L. Lineberger and Mr. R. L. Lineberger, both of Gray, Ga.**

Every member of management needs guidance from time to time on the important items to analyze and evaluate in considering an employe for promotion. There may be many differences of opinion on this, but, in my opinion, certain factors must be considered, weighed, and weighted in each case. The ones that I think are most important and have the broadest application are these:

(1) *Effectiveness of the employe* in his present position. Only under unusual circumstances will you find an employe performing poorly in his present position, yet eligible for promotion to another.

(2) *Previous experience in positions that would qualify the employe for job specifications of the new position.* There is very little that can be substituted for experience.

(3) *Age of employe.* This, as was indicated before, assists us in determining the timing of our decision as it applies to the individual.

(4) *Number of years of service.* Again, when considered with age and other factors, this helps us to intelligently plan the timely movement of personnel; gives due regard to seniority.

(5) *Educational background (including informal training as well as formal schooling).* The significance of this factor becomes greater as the demand for more technical knowledge increases.

(6) *General attitude of employe.* Wrapped up in this factor, among other things, are persistence and loyalty—the attitude that succeeds where others fail.

(7) *Personal qualifications and characteristics (including general physical condition).* It is imperative that the employe have the emotional, physical and mental capabilities to progress; each one must be measured against his own maximum limitations.

Now, then, to intelligently make this evaluation and to arrive at a proper decision, it might be helpful to employ the following media:

(1) Personal judgment of top management.
(2) Supervisory rating of performance or management appraisals.
(3) Selected scientific tests.
(4) Personnel records.
(5) Personal interview.
(6) Physical examination.

The final decision or determination should take into account all or most of these media and should not be made on the basis of only one or just a few.

It has not been my intention or desire to take issue with any system or plan of development that may have been set up or is in the process of design, but rather to point out and emphasize the pertinent points that, in my opinion, are necessary in any management development. These components will vary, as they properly should, with the requirements and needs of each organization. However, on this basic skeleton can be built a dynamic and active plan of development which, when brought alive by a progressive and enthusiastic battery of managers, will produce a qualified high calibre management and a profitable operation.

Frederick R. Kappel, president of the American Telephone & Telegraph Co. (one of our strongest competitors), summed it up very well when he said, "We will do the best job, I'm sure, when, and only when, every boss acts on the understanding that an indispensable part of his assignment is to do everything he thoughtfully and reasonably can to encourage the growth of his subordinates."

**Left to right: Richard Lund of Riverside, Ill.; Earl L. Murray and Mrs. Murray, of Montfort, Wis., and Dale D. Jacobson of Hector, Minn.**

# Traffic Economics

By L. G. BECK*

*(A Traffic Conference Address)*

AS A STARTING point for this discussion of "Traffic Economics," a definition of the responsibility of the traffic department should be considered. This responsibility can be simply stated as the acceptance of every offered call with the intention of completing it as quickly as can be done economically — regardless of the destination of the call, that is, whether it goes across the street or to the other side of the world, and also, regardless of whether it is handled manually by an operator, or whether it is directly dialed by the customer. This appears logical from the standpoint of comparison with other industries inasmuch as their traffic departments are associated with the movement of their products, and certainly in the telephone business telephone calls are our products.

In this analysis of traffic economics, I will be guided by those things which we consider important in the operation of our West Coast Telephone Co. Some of the items may apply to your company and some may not. So that you may be able to make comparisons of your own, you should know something about our operations. We operate 167,000 stations in Washington, Oregon and California. Our traffic expenses will be about 2.3 million dollars this year. Our total telephone operating expenses, that is, exclusive of depreciation and taxes, will be about 8½ million dollars which means that 27 cents of our expense dollar, exclusive of depreciation and taxes, is spent by our traffic department. About 90 per cent of our stations are on a local dial basis, and about 40 per cent have access to nationwide customer toll dialing. We expect to be 100 per cent local dial operation in the near future—close enough now that we can see it with the lower part of our bifocals. We expect further conversions to Direct Distance Dialing (DDD) as the feasibility warrants. In spite of this mechanization, we are still talking about a traffic department expense of over two million dollars and we think that amount of money requires some controls.

With only 10 per cent of our stations on a local manual basis, it is apparent that most of our traffic expenses are associated with the handling of toll traffic. Under these circumstances, the first point of reference in our monthly reviews of revenues and expenses is the relationship of the traffic expenses to the toll revenues. In other words, if our toll revenues go down, we expect the traffic expenses to also be lower and, of course, when the toll revenues go up we expect some increase in traffic expenses.

Since 92 cents out of every traffic expense dollar is paid out for operator wages and training expense, there can be little doubt as to where the greatest amount can be accomplished through the use of controls or better methods. Directly associated with this, of course, is the load or traffic efficiency. Examination of our traffic expense and the system load carried shows that each point on the load represents approximately $12,500 of annual traffic expense. Thus, when the load goes up one point we save $12,500; when it goes down a point our expenses go up by $12,500 on an annual rate. This load includes all operator functions 24 hours a day and includes Saturdays, Sundays and holidays as well as normal weekdays. We, therefore, consider this expression of load as a very significant measuring stick.

Now, to the specifics of traffic economics, as we see them. They are: service objectives, force adjustment, training, force losses or turnover, absence control, customer instruction, dial office management, and the use of statistics.

### *Service Objectives*

We believe in establishing service objectives. Generally, these objectives must be established by each company and related to the telephone needs of the community. We believe, however, that our customers expect us to be practical, and being practical means operating a business on a sound economical basis. In measuring the speed of an operator's answer the usual method is to use "per cent answers over 10 seconds."

It is my understanding that there are a lot of companies whose objective recording answer, or CLR operator's answer, is approximately 7 per cent over 10 seconds. If this were stated in an average answer it would be something a little bit less than 4 seconds. We measure our speed of answer in average seconds.

We have established an objective of 6 seconds. In comparing this with the "per cent over 10 seconds" it means 15 per cent over 10 seconds. Since a figure such as this would lose 10 points on the observation index, as used by some companies, this may be looked upon as a horrible grade of service.

Now, we recognize that this objective of ours which is 2 seconds slower ties up, in a dial office, a linefinder, a first selector and the trunk equipment 2 seconds longer than the faster objectives and, therefore, demands more equipment. On the other hand, it is equally apparent that if faster answers are given it takes more people and, therefore, more positions. In our case

*Mr. Beck is Vice President and General Manager of West Coast Telephone Co., Everett, Wash.

these items are all fractional and have, therefore, been discounted. We arrived at our average answer objective of 6 seconds because the normal ringing interval on our ringing machines is 6 seconds. The average subscriber does not expect anything to happen until he has heard at least one ring back.

We, therefore, thought that our subscribers would be satisfied with the service where, on the average, the operator answered after one ring back. We have asked a lot of our subscribers and, in some cases, subscribers of other companies, this question—"Would you be satisfied with the speed of an operator's answer if 9 out of 10 times you were answered before the second ring back?" There has never been anything but an affirmative answer to this question. As further proof of the reasonableness of this objective we have had no comments of slow service when we have provided an average answer of 6 seconds.

It may be of further interest to tell you that we operate in some areas which are immediately adjacent to offices where the 4-second answer is the objective without complaint of slow answers from our subscribers. In addition, early this year we transferred about 14,000 stations from one of these adjacent toll centers to a toll center of our own without the subscribers, in general, being aware of the change. Since that time we have had no complaints of slow answers. As a matter of fact, we doubt if very many of our subscribers, or yours, can tell the difference between a 4-second and a 6-second answer.

Your logical question can be, "Is there a dollar value that you can place on this difference in objective?". We think we can, however, it must be estimated for the very simple reason that it is impossible to handle the same traffic under two different conditions at the same time. Careful analysis, however, of our loads and our speed of answer indicate that, on a system basis, the 2-second difference in average speed of answer represents a seven-point difference in the load and, at $12,500 a point, this equals $87,500 a year.

Left to right: Alvin Cypher, Mrs. Cypher, Mrs. Franklin A. Miles and Mr. Miles, all of New Bethlehem, Pa.

### *Force Adjustment*

The second item we mentioned in connection with traffic economics was the matter of force adjustment—and there have been countless speeches and papers on this subject and I might add that most such papers and speeches have complicated rather than simplified the subject of force adjustment. We believe that force adjustment can be stated very simply as being the provision of the right number of right people on duty at the right time.

Over the years, we have heard many discussions about the use of experience tables. It has been very difficult for us to find operators to fit the table—therefore, we don't use any experience table. The only item of experience which we measure is one that is purely arbitrary in that we divide our operators between those with less than six months, or more than six months, service.

Actually this has nothing to do with our force adjustment and is merely the point at which an employe moves from a probationary status to a permanent employe under our agreement with the union. We believe six months is a fair trial period in which to judge our selection of people, and if there is indication that an operator may not make the grade we take the necessary action before the expiration of six months and thereby eliminate a lot of complications. Where this plan is followed religiously by our local managements, we know that we have the "right people" and the experience table then becomes unnecessary.

In our general office we maintain charts and graphs of the offered traffic on a weekly basis. We find the weekly trends of the past are surprisingly accurate in forecasting the future. The level changes but, for the most part, the *trends* are constant. We use this method as a basis of estimating the right number of people. We arrive at the right number by analyzing the number of tickets written per operator hour.

The number of tickets per operator hour is carefully plotted with the answering time results. In other words, we estimate the number of tickets per operator hour on the basis of a 6-second average answer. Obviously, the estimated toll tickets, divided by the number of tickets per operator hour, indicates how many hours are expected to be required. This part of the job is done in our general office and we then let the chief operator know how many hours per day are expected. We do not tell her at what hours of the day she should use these people. We pay our chief operators a satisfactory salary and, in turn, expect from them satisfactory management results.

We believe the chief operator can assign the total number of hours re-

*(Continued on page 128)*

Left to right: Roger A. Curtis of Harvard, Mass.; El Corujo of Manchester, N. H.; Morris L. Hansen of Washington, D. C.; W. J. Anderson of Manchester, and Hugh P. Bannon of Chicago.

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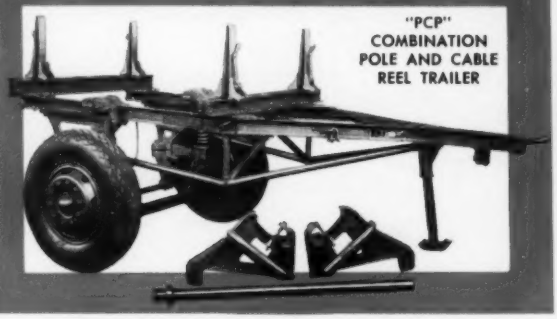

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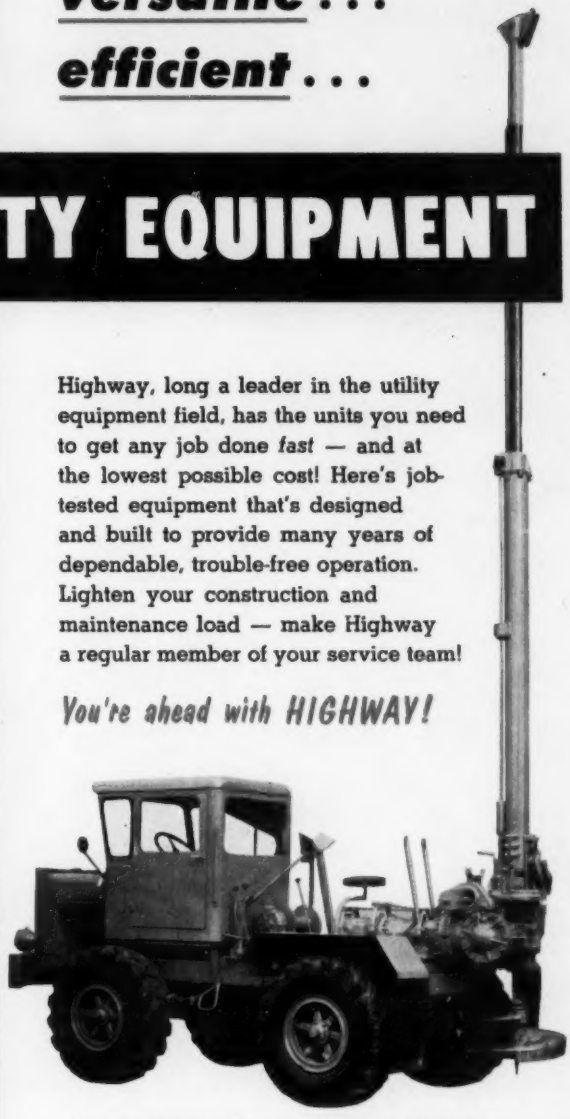

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SALES AND SERVICE IN PRINCIPAL CITIES

# BEAUTY

## A nationwide promotion

The pictures you see above are borrowed from our advertising campaign which is running this month—in full color—in many national consumer magazines.

They illustrate the campaign's theme and message—"Beauty on Duty . . . a bedroom extension phone saves steps by day, worry by night, and gives you privacy always."

The combined circulation of the magazines carrying the ad is over 65,000,000 people throughout the country—customers of *every* telephone company. And, in addition, commercials on the Bell Telephone Hour (NBC-TV), October 9th and 23rd, will dramatize the convenience of bedroom extension phones to millions of television viewers.

# ON DUTY

## of bedroom extensions

Tune in the Bell Telephone Hour, and look for the ad in these widely-read magazines: *The Saturday Evening Post* • *Life* • *Look* *Ladies' Home Journal* • *McCall's* • *Reader's Digest* • *Coronet* • *Good Housekeeping* • *Parents' Woman's Day* • *Everywoman's Family Circle* *American Home* • *Better Homes & Gardens* *National Geographic Magazine.*

Bell Telephone System

quired on the basis of her intimate knowledge of the day-to-day requirements, both from the standpoint of fluctuating traffic and from the standpoint of the people whom she has available.

For example, the chief operator may know from her local experience that on a Monday she requires one more person in the morning busy hour than she does in other days of the week. Likewise, there may be afternoons when she needs less than the regular schedule. Taking care of these conditions is the responsibility of the chief operator. We believe there are many times when top management people are surprised and shocked at how well people down the line can accept responsibilities if they are given the authority to go with those responsibilities.

**Left to right: Charles Schick and H. J. Guzewicz, both of North Wells, Pa.; Earle Blomeyer and Tom Ulbricht, both of Atlanta, Ga., and Elvin Durr of Kansas City, Mo.**

### *Training*

Our next item has to do with training, and by training we mean at all central office levels from the chief operator to the initial training of the new employe. Time does not permit going into the details of our training program, but I want to mention two items in connection with it.

The first item does not even require any argument. It is obvious that the well-trained person can do a much better job than one who is not properly trained.

The second item that I'll mention here is that all training programs require constant analyses and review to make sure they fit present day conditions.

For example, by giving our traffic training supervisor the time to think and analyze, as well as to plan incidental training following an initial training course, she was able to reduce our initial operator training course from 15 days to 12. This means that each time we train a class of two operators we save over $100. There is also additional benefit which sometimes has an effect on our service, and that is we are sometimes under pressure to provide additional people. By having a training course of 12 days instead of 15, it is possible through the employment of one day overtime each week to provide the additional operators in two weeks instead of three. We, therefore, say that training is a substantial item in traffic economics.

### *Force Losses*

As to the subject of force losses, or force turnover, and its effects on the economics of the traffic department, I'm sure you will not be surprised if I say we do not have a full answer to this problem, and I might add that if any of you do have the full solution we would be glad to hear it. We do know, however, that careful selection of new people can help a lot. In most of our operator office localities there are state employment service offices. We use these offices to full advantage by having them give aptitude tests to our applicants for operator positions and, thereby, do the first screening job for us. Through the use of this service we have cut down considerably the number of interviews required by our employment people in appraising applicants. In addition to aptitude, one of the things that we have learned to look at very carefully is the possible permanence of the applicant. For example, we would not expect much permanence from the wife of an itinerant mill worker who is living in a motel or trailer camp.

There have been times when we have had no normally acceptable applicants in some of our areas. Our experience has been that when we hired the best of the normally non-acceptable ones we wasted our money—the training was useless, the supervisory requirement burdensome, etc. We are convinced that our service would have been better if we worked one shift short, or scheduled overtime, than it was by filling the operator requirement with a misfit.

Every once in a while we find that force losses occur as the result of poor supervision in the office. It seems almost impossible for this to happen, especially when we are very selective in picking our supervisors and when we train them thoroughly. We simply must remember that we are all human and, as such, we are subject to all kinds of moods.

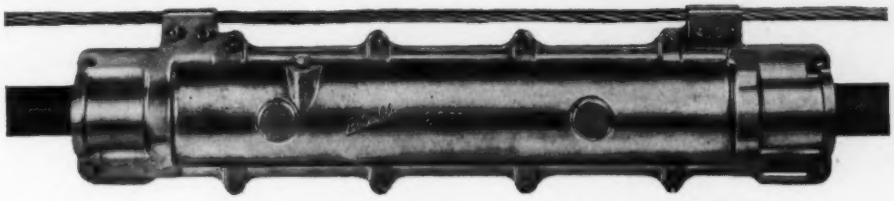
It is possible to have a very fine supervisor in all respects and then find that, as a result of some personal troubles which are bothering her, she can rather quickly reach the point where she is a menace to the office, because her personal troubles have been carried to the job and, therefore, interfere with her treatment of subordinates. Several losses may occur be-

*(Continued on page 160)*

**Left to right: H. L. Bennett of Chicago; H. M. Keck and Richard Cutrell, both of Kecksburg, Pa.**

# Now from Reliable...

## splice cases



For use with lead, Alpeth and Stalpeth sheathed cables up to 1.6" diameter.

## and

## splice case terminals

Single terminal — 6, 11 and 16 pair.
Two terminals, back to back — 12, 17, 22, 27 and 32 pair.
Unprotected or protected.

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Send us your Installation Specification No. 104 and additional information on these splice cases and splice case terminals.

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# The Traffic Department and Customer Relations

By WILSON B. GARNETT*

*(A Traffic Conference Address)*

CUSTOMER relations has been described as an intangible thing—an effect, a result. The effect is the impression which the customer group has of a company, its product or its service. The result is the degree of customer understanding and acceptance of the company, its product, its service, its objectives, its plans and its problems. Certainly, the telephone industry, as a regulated utility, has as great a need for public understanding, acceptance, and support as any industry or business.

The very foundation of customer relations is the quality of our service. Unless our customers are satisfied with the service we offer, all other efforts to develop good customer relations will, for the most part, be wasted effort. Not only must we provide good service to our customers today, but we must prepare for meeting their needs and demands in the future. We are living in a world and society which is constantly changing, moving, and progressing. We must be ever cognizant of the changing nature of customers' needs and be prepared to meet them. Unless we do, someone else will; and, the telephone industry will go the way of the horse and buggy. We must think progressively, always searching for new and better ways to serve our customers. Yes, this is a part of good service.

The customer's impression of a company results from many things — its service, its buildings, its equipment—but, perhaps, the most important and lasting impression is made by the personnel of a company. Each employe contributes to this impression through his enthusiasm, his ability to do his job, and his attitude toward the customer, his job and the company. An employe's enthusiasm and attitude will not be any better than his knowledge of the company.

Too frequently, I think, we fail to give our people sufficient information about the company, its problems and its objectives. We must make them a member of the team by proper orientation, and by keeping them fully and constantly aware of what is going on. It is imperative that we train our employes well, that each employe have a sincere and conscientious appreciation for the importance of his job, and that he take pride in doing it well. One poorly-trained employe, with a poor attitude and lack of enthusiasm, can do more harm to customer relations than can be overcome by 10 properly-trained, enthusiastic employes with a wholesome attitude.

Customer and public understanding is essential to good customer relations. Understanding is the result of being informed. We must keep our customers informed about the company, about the work we are doing, about the progress we are making, about our plans for the future, and about our problems. We are a most important part of every community we serve. Our growth and progress is of great interest to our customers. Tell them about it through timely news releases, through community activities, and by use of advertising media. Talks before civic clubs and periodic open houses are always helpful. Individual contacts between customers and well-informed enthusiastic employes, on both business and social occasions, offer excellent opportunities to develop a better understanding and acceptance of our problems, plans and objectives.

The traffic department plays a vital role in every telephone company's customer relations effort. Now I don't propose to try to tell you how to play this role—that is for the experts; but, I would like to outline it as I see it. First and foremost, traffic must fulfill its responsibilities of doing a good service job. This involves such things as employing, training and developing the traffic force, providing adequate switchboard positions, long distance circuits and local trunking to furnish good, dependable and acceptable service. It requires proper force assignment to meet the fluctuations in traffic, the development of service objectives, together with methods of constantly and continuously measuring the level and quality of service. Corrective methods must be planned, and immediately available, if the level or quality of service falls below established objectives.

There are more contacts between customers and members of the traffic department than any other. Each of these contacts is an important opportunity to influence customer relations. Many heroic episodes are recorded of the switchboard operator who remained at her position in the face of personal danger, of the operator whose efforts above and beyond the call of duty saved a life. These truly represent the spirit of service of our industry, and the public reaction is good; but, we cannot depend upon these for good customer relations. We must find ways to impress the customer with our genuine desire to serve him in the every day routine contacts.

I was impressed by an article which appeared in a recent issue of Telephone Engineer and Management entitled "What Do Newsmen Think of Your Company?". The author, a newspaper man, interviewed a number of his colleagues in order to answer this question for us. One editor made the following statement, "Yes, the telephone company

*(Continued on page 134)*

*Mr. Garnett is Division Manager of Central Telephone Co., Hickory, N. C.

# SIERRA ELECTRONIC CORPORATION

TRADE MARK

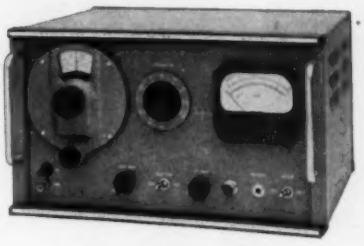
## FREQUENCY-SELECTIVE VOLTMETERS

Sierra offers six accurate, stable, tuned vacuum tube voltmeters for carrier system and other field or laboratory work. Collective frequency coverage is 3 kc to 800 kc. All models are direct reading in voltage and dbm at 600 ohms from — 80 dbm to + 42 dbm. Circuits include a self-contained calibration oscillator. Models 108B and 121Y feature 20-pin connector and selector switch for rapid patching to carrier racks. Request Bulletin 107.

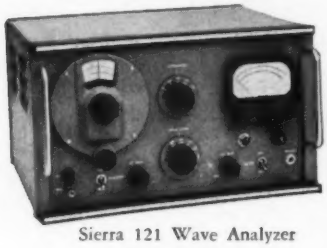
| Model | Frequency Range—kc | Selectivity | | Accuracy | | Direct Reading in dbm | |
|---|---|---|---|---|---|---|---|
| | | Down 3db | Down 45db | Frequency | Measuring | Balanced | Unbalanced |
| 101C | 20-500 | ± 550 cps | ± 2900 cps | Note A | ± 3 db | Note D | 600 ohms |
| 103B† | 3- 40 | ± 400 cps | ± 3000 cps | ± 0.5 KC | ± 3 db | Note D | 600 ohms |
| 104A | 5-150 | ± 300 cps | ± 1500 cps | ± 1 KC | ± 3 db | Note D | 600 ohms |
| 108B | 15-500 | ± 550 cps | ± 2900 cps | ± 3 KC Note B | ± 2 db Note C | 135 ohms Note D | 600 ohms |
| 114A | 100-800 | ± 550 cps | ± 2900 cps | Note A | ± 3 db | Note D | 600 ohms |
| 121Y | 15-500 | ± 100 cps | ± 1000 cps | ± 3 KC | ± 2 db | 135/600Ω | |

All Sierra Carrier Frequency Voltmeters feature built-in calibration oscillators and circuits for level calibration, have aural monitoring jacks, and (except 103B) are furnished with Sierra Model 149A Precision Spiral Scale Dials. New Sierra 121Y CFVM, similar to Model 121A Analyzer but has special 20-pin connectors and selector switch for rapid patching to carrier racks; also has aural monitoring jacks.

†Contains carrier re-insertion oscillator for monitoring suppressed carrier systems. Furnished with planetary drive dial. Note A. Ranges from ± 2 KC at low end of dial to ± 3 KC at upper end. Note B. ± 1 KC in the 48 KC to 256 KC region. Note C. ± 1 db for + 30 db to —40 db attenuator steps on 135 ohm balanced measurements. Note D. All models may be converted for 135 and 600 ohm balanced line measurements by convenient plug-in bridging transformer, Model 130D.



Sierra 104 Carrier Frequency Voltmeter

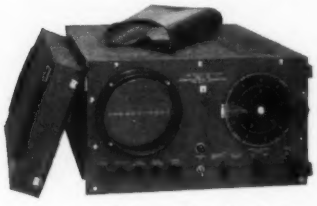


Sierra 121 Wave Analyzer

## WAVE ANALYZERS

Sierra offers two precision wave analyzers for maximum operating ease, accuracy and convenience in analyzing complex wave forms. Model 121A covers frequencies 15 kc to 500 kc; Model 158, 500 kc to 10 mc. Both instruments have input range of — 70 dbm to + 42 dbm at 600 ohms; high selectivity, high accuracy. Calibrations are direct in voltage and dbm. Request Bulletin 103.

Sierra 158 Wave Analyzer



Sierra 124A Line Fault Analyzer

## LINE FAULT ANALYZER

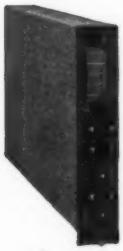
Operates on most open wire power, communications lines. Instantly pin-points shorts, opens, grounds. Direct reading, easy to use, range ½ to 200 miles. Sweep marker continuously adjustable from 5 to 100 miles; locates faults with accuracy of ¼ mile. Request Bulletin 102.

(Sierra now offers Model 169 Line Coupling Network rated at 5 kv. Ideal for coupling Model 124A to "dead" power lines. Affords protection to personnel and equipment.)

Sierra 130D Line Bridging Transformer

## LINE BRIDGING TRANSFORMER

Converts voltmeter and wave analyzer inputs from single-ended to balanced operation. Model 130D bridges both 135 and 600 ohm balanced lines. Frequency range 4 KC to 500 KC. Write for details.



Sierra 218 Monitor Oscilloscope

## NEW MONITOR OSCILLOSCOPES

The new Sierra Oscilloscopes, Model 218 Series are especially designed for continuous function monitoring of as many as seven channels simultaneously in one rack unit. Rugged and compact, the Scopes provide, in the smallest possible package, a convenient means for viewing and evaluating complex voltages. Designed primarily for tape recording and data handling systems, the Scopes are particularly ideal for measuring and analyzing mechanical quantities through a transducer, such as stress, strain and vibration, pressure, displacement and acceleration. Request Bulletin.

Sierra 219A Transistor Tester

## NEW IN-CIRCUIT TRANSISTOR TESTER

The new Sierra Model 219A Transistor Tester provides a technical breakthrough —a means for in-circuit transistor testing, saving hours of trouble shooting and service time. Designed with a unique combination of transistor circuits, using low impedance methods, the Tester will measure the Beta parameter of a transistor while it is connected in a circuit. Beta and Collector Current parameters may be measured with the transistor removed from the circuit. Request Bulletin.

**Sierra Electronic Corporation**

*A Subsidiary of Philco Corporation*

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# See how Leich's Cuts Outside Plant

In growing areas, the cost of providing telephone service is becoming more and more expensive. Leich's Line Concentrator provides many ways to economically solve this problem. It lets you add telephones in an area without installing additional outside plant.

By distributing a number of subscriber lines over a few trunks to the central office, it greatly reduces outside plant costs. It uses the same principle that is the basis of all central office layout; among a large group of subscribers, only a few will require telephone service at the same time.

A concentrator installation consists of two units—an exchange unit and a remote subscriber unit. No power is required at the remote distribution point. No modifications are necessary in the central office switching equipment, which can be either manual or dial.

**Here's a Typical Problem**

Seventy stations are served by a 25 pair cable into an area, and no spare facilities are available. You are faced with a demand for upgraded service by most of the seventy subscribers. What's more, a new housing development will soon require an additional 12 lines.

To furnish the desired service, you would normally add 25 cable pairs. In this case, it would mean replacing 3200 feet of 26 pair cable with 51 pair at a cost of $2,200. An additional $6,800 would have to be spent on feeder cables. Your total costs would be approximately $9,000.

LEICH GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

# Line Concentrator Costs in Growing Areas

**Leich's Line Concentrator Cuts Costs 50%**

Since Leich's Line Concentrator lets you "concentrate" the calling load of a large group of lines onto a few cable pairs, it would *not* be necessary to add the new and larger cable facilities. For example, Leich's 49-9-2AZ Concentrator uses only eleven cable pairs for 9 traffic trunks (with 2 pairs for control purposes) to serve 49 subscriber lines. Any 11 of the cable pairs may be used for the concentrator trunks and control leads, and the subscriber lines formerly served thereon shifted to concentrator lines. For maximum effectiveness, lines on which the traffic is light are best suited for concentrator assignments. You would then be able to upgrade existing service, furnish the 12 lines to the new housing development, and be able to absorb some future growth without addition of cable.

The 49-9-2AZ Line Concentrator, including the All Trunks Busy option and weather-proof cabinet for mounting the subscriber end unit costs you only $4,205 plus your installation costs. Since the conventional cable relief job would cost $9,000, your expense is halved.

**Prompt Delivery From Stock on Two Models**

Two basic sizes of the Leich Line Concentrator are available from stock. They can be shipped within 30 days from receipt of order.

The 49-9-2AZ, is equipped with 49 lines and 9 traffic trunks and 2 control trunks. The 49-18-3AZ is equipped with 49 lines, 18 traffic trunks, and needs three pairs for control purposes. The latter unit will accommodate a higher calling rate.

There are so many different ways you can use the Line Concentrator to save on plant costs, to upgrade service or to add customers. A Leich sales engineer is available—no obligation—to tell you the whole story. Write today.

LEICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS
PACIFIC COAST: 11401 W. PICO BLVD., LOS ANGELES 64, CAL.
SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS
EAST: 3651 CONNECTICUT AVENUE, YOUNGSTOWN, OHIO
SOUTHEAST: 5126 SOUTH LOIS ST., TAMPA 11, FLORIDA
**manufacturers of telephones, switchboards and related apparatus since 1907**

here has courteous employes but sometimes they place courtesy above efficiency. The tradition of being polite under all conditions is fine, but I would prefer a sacrifice of courtesy if necessary to get more efficiency."

This, I think, shows that phraseology alone will not impress our customers; but even so, I wonder if some improvement cannot be made in this area? One West Coast company reports excellent customer reaction to the answering phrase of "May we help you" in place of the conventional answer of "Operator." A New England company is experimenting with the phrase, "Your Call Please."

With more and more automation in our industry, and particularly Direct Distance Dialing (DDD), the frequency of operator contacts with customers is diminishing. However, this does not mean that the traffic department's role in customer relations is diminishing. If anything, it presents greater challenges and opportunities for traffic people.

With DDD, customer education and training becomes increasingly more important. Many millions of dollars have been and are being invested in toll switching equipment and trunks. With operator toll dialing, it was relatively easy to train operators to use these facilities properly and in the most efficient manner. With DDD, we are turning the customer loose, so to speak, on the toll network. In order to obtain the greatest degree of efficiency from these expensive facilities and at the same time assure good service, our customer education programs must be designed to accomplish the desired results, and expanded to cover all telephone users. We must use all available training media, such as educational programs in schools, talks to civic and business groups, timely and well prepared news articles, clear and understandable directory instructions.

**Left to right: George A. Strichman of Chicago; J. Ballard Atherton of Honolulu, Hawaii; Harold S. Geneen of New York City, and D. E. Adler of Honolulu.**

DDD places greater responsibilities on dial service assistance operators. Their importance will increase as more and more DDD installations are made. We must find better and more efficient methods of assisting customers in dialing their own calls, rather than placing calls with the operator. Assistance calls can serve as a good measurement of the effectiveness of customer training efforts, and can provide a valuable basis for improving training programs, and for subsequent customer education work.

Perhaps one of the most important customer relations activities of the traffic department is that of dealing with PBX customers. Their number increases monthly, and indications are that more and more of our business users will be PBX customers in the future. They are also the largest toll users, and our responsibilities to them must be met. What are some of these responsibilities?

**Left to right: T. E. Rose of Hamilton, Bermuda; F. S. Florance of Monroe, N. Y., and G. B. Quatman Sr. of Lima, O.**

**Left to right: W. F. Scarbro of Powell, Tenn.; Mrs. B. T. Malmquist of Chicago; Mr. Malmquist; C. S. Scarbro, Powell, and Mrs. W. C. Olson of Lanark, Ill.**

We must determine the customer's equipment requirements, assist in employment and training of attendants, instruct and train extension users, and provide continuous supervision of the service. This work can best be accomplished through a PBX service adviser, or similar position. The work of a PBX service adviser ranges from that of an ambassador of good-will, to instructor, to personnel expert, and even to an equipment expert. She must not only work with the PBX attendant, but

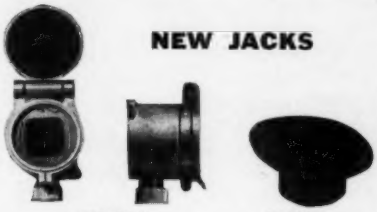
# SUTTLE SUPPLY LINES

SUTTLE—Suppliers of Equipment to Telephone Men—Since 1910

## KUNZ LINEMEN'S GLOVES AND PROTECTORS

Designed for protection, comfort, and service — KUNZ Gloves and Protectors feature highest quality workmanship and materials. Among linemen "best sellers" are KUNZ style 150-X-Heavy Buckskin and style 80-Goatskin, 4½" gauntlet linemen's gloves. Style 1005-goatskin and style 1003-horsehide are -specially designed curved hand rubber glove protectors—soft, pliable, and excellent wearing. For quality and wear, order KUNZ gloves from SUTTLE.

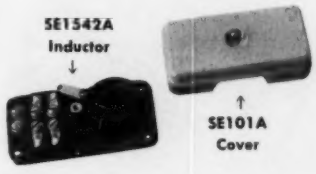
## NEW JACKS



SE16151 SE493A

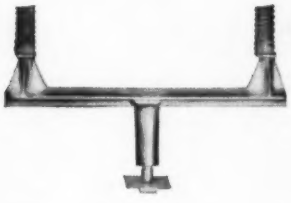
**OUTDOOR**
The new outdoor, weatherproof SE-16151 jack from SUTTLE is ideal for outdoor telephone service. The non-corrosive, waterproof aluminum receptacle houses the SE493A jack. This new jack makes an excellent extension sale-revenue booster.

**INDOOR**
In brown or ivory plastic, the SE-493A jack can be flush mounted directly in molding or wall. Four (4) spring tensioned jack holes accept standard SE283B 4-prong plug. No conduit box necessary. SE493A, $1.30 each. Can be used with SE-19B plate, $.30 each. Specify brown or ivory.



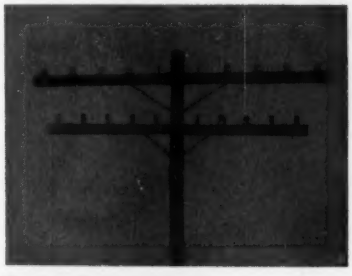

## ELIMINATE INDUCED RADIO NOISE!

A new W.E. equivalent product, the SE1542A Inductor is a combination 4 terminal block and choke coil which completely eliminates induced radio noise at subscriber locations. Every operating company will need several of these new SUTTLE units. Unit uses SE101A plastic cover. Write or call SUTTLE or your local distributor for literature and prices.



## NEW ALUMINUM TRANSPOSITION BRACKETS

The PERMANENT MOLD FOUNDRY aluminum transposition brackets help eliminate frequent replacements. Made of a new aluminum alloy, they are completely assembled and ready to install in crossarm, thus saving the additional cost of assembly. Send your orders today to SUTTLE, or your local distributor.



## FAST DELIVERY ON CROSSARMS

SUTTLE speeds crossarm delivery by using any one of six shipping points. Manufactured by AMERICAN CROSSARM to meet full NELA and REA specifications. Arms available in clear grades of Douglas fir, yellow pine and cypress. Regular telephone pony-size arms are stocked in 4, 6, 8, and 10-pin sizes, as well as 10-pin arm drilled for 10 insulated fork Brackets. For prompt delivery, order from SUTTLE.

## NEW COOK LOADING COIL CASE

All packaged in one compact unit for easy installation and accessibility. COOK Loading Coils reduce attenuation, combat frequency distortion and avoid cross talk on existing lines. 3C protector blocks assure moisture proof termination. The COOK Coil Case is made in 6, 11, and 16 pair and the loading coils have a nominal inductance of 88MH. For prompt delivery, order from SUTTLE.

Manufacturers, suppliers, and printers to Telephone Men — Since 1910

*For further information, specifications or quotations on these telephone supplies— write, wire or telephone—*

**SUTTLE EQUIPMENT CORPORATION**

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Phone: Lawrenceville 782

135 S. La Salle St., Chicago 3, Illinois
Phone: DEarborn 2-3108

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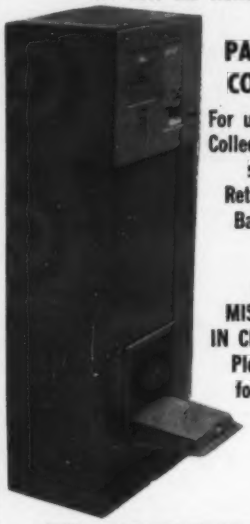
DROPOSITORY
Specifically Suited to YOUR Needs!
COMPLETE *Self-Service* EQUIPMENT for PAYMENTS or DEPOSITS *"After Hours"*
Used by Public Utility Companies All Over the World



PAYMENT COUNTER
For use by your Collecting Agents such as Retail Stores, Banks, etc.

IF WE MISSED YOU IN CHICAGO . . . Please write for details!

*Economical* PLATE GLASS INSTALLATION
(May Be Installed In Walls)

The Mosler DROPOSITORY Corporation ®
GRANDVIEW, MO.
Telephone: (Kansas City Exchange)
SOuth 1-8911

with the extension users and the customer's management personnel.

With the expansion of DDD the requirement for and the importance of the PBX service adviser increases. Her work can mean improved customer relations as well as important monetary savings to her company and the customer. By all means, traffic should provide supervision and assistance to PBX customers. Select the person for this work with the greatest of care, train her well, for she could be one of the most important persons in the traffic department.

Traffic is responsible for keeping management advised of many things which can have a direct bearing on customer relations — when a customer needs more trunks, as to additional listings, and others. Traffic should maintain continuous analyses of toll routes, particularly those where extended area service is a possibility. When toll calling between nearby exchanges reaches a point that a definite community of interest is evident, management should be advised. My experience has been that customers like extended area service (EAS) when it is in the interest of the majority of the subscriber group. Why, then, shouldn't we carry the ball where EAS is practical and economically feasible rather than waiting for our customers to demand it?

In many companies, there are more employes in the traffic department than in any other. Certainly, then, traffic employes are, or should be, an important part of the over-all customer relations effort. Outside of the office, these employes, through their social and other activities, can be builders of good customer relations. The picture of the company which traffic employes paint for their friends and acquaintances leaves an impression and that impression is either good or bad, but it is customer relations.

Traffic management has an obligation to select, train and develop employes who will be an asset to the company's program. To do this, traffic management has the responsibility of keeping traffic personnel fully informed of the company's objectives, of the work which is being done, and of future plans. This responsibility includes keeping employes abreast of new developments in the industry, and of the progress of the company toward meeting its objectives.

Yes, the traffic department can and should play a major role in customer relations. No company's efforts can be fully effective without traffic's contribution. To this end, traffic has an obligation and responsibility to provide continuously improving service, to train and educate customers in the use of the service, to provide special supervision and assistance to PBX customers, to keep management informed of new and extended services which can be offered on a profitable basis, and to develop proper customer relations attitudes within the traffic force both on and off the job.

## Obituaries

LYNDON FARWELL, 52, president of the Western California Telephone Co., Los Gatos, died on Oct. 5.

Mr. Farwell went to the Western California company in 1940 as manager and secretary-treasurer. At that time the company was the Los Gatos Telephone Co. His father, the late J. D. Farwell, was one of the founders of the company.

In 1942, he was elected a director, becoming vice president and general manager in 1948, and president in 1951.

Prior to his going to the Western California company, he spent two years with the Pacific Telephone & Telegraph Co.

He was a graduate of Stanford University with a degree in electrical engineering.

At the time of his death, he was a director and vice president of the California Independent Telephone Association.

Survivors include his wife, Louise, two sons, Jimmy and Lyndon J., who is studying for the priesthood at Sacred Heart Novitiate; and his mother, Mrs. Irma Farwell, all of Los Gatos.

•

JOHN H. LANDES, 31, dial superintendent of the Citizens Telephone Co., Inc., Bridgman, Mich. died suddenly on Oct. 14, of an apparent heart attack. He and his wife had returned home several hours before from the USITA convention.

Mr. Landes was born in Clackamas, Ore. He worked as an installer for Kellogg Switchboard & Supply Co. after his return from military service.

With Kellogg, he rose to the position of installer crew foreman before joining the Citizens company in 1953. He became dial superintendent in 1955.

Survivors include his wife, the former Helen Schiller of Sawyer, Mich.; and a daughter, Joanne; as well as his sisters, Mrs. Erwin Maedke of Portland, Ore., and Mrs. Richard C. Elsea of Potlach, Ida.

## Capacity

"Not what we have, but what we enjoy, constitutes our abundance."—J. PETIT-SENN.

# TELEPHONY'S FINEST HOUR

*Continued from page 24*

across the entire spectrum of science and engineering.

Today, we are on the eve of the most dynamic era in history. Automation is coming so fast it is impossible for us to keep up with it. But I know of one executive (not a telephone man) who quieted the fears of his rather voluptuous secretary, who had all the curves in the right places, by calling her into his office and saying, "You quit worrying about your job young lady—no machine will ever take your place."

But seriously we can only faintly conceive what is ahead of us when we realize that this year business, government and our educational institutions are spending 9 billion dollars on research and development. It is estimated that 120 billion dollars will be spent on research in the next decade, more than the national total investment in science from 1776 down to the present moment. This means that many things and processes, which will be developed in our lifetime, will dwarf the advancements we have made in the past thirty years.

But one thing we must not overlook. With all this technical progress we must develop people who can manage the business. This is the most important thing of all. Unless it is done all efforts go for naught. All of this then can be summed up in the words of the late Charles F. Kettering who said, "My primary interest is in the future because that is where I expect to spend the rest of my time."

How are we going to meet the challenges that these achievements in science and changes in our way of life are certain to bring about?

Well, of one thing I am sure: If we work with others, if we work together, we can attain every goal we can ever dream of. The story of communications, I am convinced, has only begun. As the story unfolds in the years ahead, we must continue to do our utmost to assure the very best for our customers, our employes, and our shareholders.

We can accomplish our goals and achieve our purposes by coming together—just as we are doing today—by thinking together, by planning together, by working together.

A long time ago, John Donne, the poet wrote:

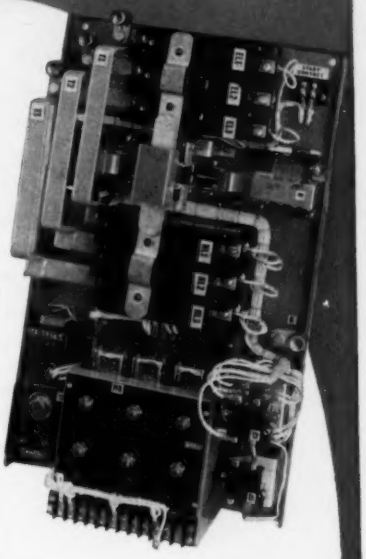
"No man is an island in himself; he is part of the main land.
If a clod be washed away, Europe is less.
Any man's death diminishes me.


NOW! TWO MODELS FOR NEW VERSATILITY

TRANS-O-MATIC* *dual circuit breaker* TRANSFER SWITCHES

NO NEUTRAL POSITION

DOUBLE SOURCE CONTROL



For higher current interrupting capacities, rely on the motor-operated Trans-O-Matic. For low current service, employ the new low-cost solenoid-operated T-100-A. Both are electrically operated . . . mechanically held, with no neutral position. Both feature Lake Shore's exclusive mechanically-linked dual circuit breaker design for *positive* two-position transfer.

Available in 2-pole, 3-pole total failure, partial failure, and under voltage protection, with many optional features.

**SOLENOID OPERATED**

To 600 volts, 100 amps AC with interrupting capacities to 15,000 amp rms.

**MOTOR OPERATED**

To 600 volts, 800 amps AC with interrupting capacities to 100,000 amp rms.†

† With current limiting fuses

*Request Bulletins 07400-07500*

*CANADIAN WESTINGHOUSE, LTD., is licensed to manufacture Trans-O-Matics in Canada.

THE Lake Shore ELECTRIC CORPORATION

208 Willis Street BEDFORD, OHIO

**THERE IS AN ECONOMICAL WAY TO BETTER OPERATOR TRAINING AND SUPERVISION!**

**LCR TOLL OPERATOR TRAINING TURRETS**

**7 AND 10 DIGIT TYPES**

LCR-7D for 2/5 Numbering
LCR-10D for Direct Distance Dialing

Trainee sits at regular operator position, but doesn't handle customer calls. Thus, no adverse customer reaction. Training supervisor can initiate every type of call the trainee will ever handle — can check speed and accuracy—can actually demonstrate errors, because trainee's action is registered step by step through lights on the turret face. And, training is not only better, but faster — for lower training costs.

**LORAIN MONITORING SYSTEMS**

Above—Chief Operator's Monitor

Above Right — Auxiliary Monitor (for Traffic Supervisor or Manager)

Designed especially for the smaller company — for checking and correcting operators' handling of calls. Constantly indicates switchboard positions occupied. Affords automatic or selective monitoring of those positions, through loudspeaker or headset, without operators' knowledge. Chief operator may speak with operator, to immediately correct errors — is warned by signal when subscriber can hear. Or, operator errors and CO's remarks can be recorded, for subsequent replay. Complete secrecy is assured. Monitoring may be "picked up" and "put aside" between CO's other duties.

BUTELCO

*Write for Bulletin 859-A, or call*

**THE BUCKEYE TELEPHONE & SUPPLY COMPANY**

1250 Kinnear Road — Columbus 21, Ohio
Telephone — HUdson 8-0655 (Area Code 614)


Never send to know for whom the bell tolls;
It tolls for thee."

What did John Donne mean? We live in and through every man's life. We die in and through every man's death. Even our souls are in the same boat.

Yes, how true it is—no man is an island. You know and I know that the work our association has done and the goals it has been able to reach are not the product of any one man's genius. We are fortunate in having in our industry many qualified men who have intense loyalty to the business in which they are engaged. In any balance sheet one might draw up we would certainly have to put down as the most valuable item on the asset side the understanding, the enthusiasm, the zeal and the fidelity of the men and women of Independent telephony who are making real contributions year in and year out to the effectiveness of our association. Let us never lose sight of that fact. And, let us not discount ourselves as individuals either. When I explore the God-given powers all of us possess, as individuals, I like to think that:

"I stand at the end of the past, where the future begins, I stand,
"Emperors lie in the dust, and men may live to command;
"But greater than rulers unborn, and greater than kings who have reigned
"Am I, that have hope in my breast and victories still to be gained.
"Under my feet the world, over my head the sky,
"Here in the center of things, in the living present am I.
"Under my feet the world, wrinkled, scarred and old;
"Over my head the stars, distant, pale and cold;
"Back of me all that was of the limitless past,
"The future waiting beyond, silent, untenanted and vast;
"And I am the link 'twixt what has been and is yet to be;
"The hope of humanity waits, while its destiny hinges on me."

Ladies and gentlemen, I would like to repeat what I have said on a number of occasions during the year, and that is how grateful I am for the honor and confidence which you have had in me. I would also like to thank the officers and directors of the USITA and all those who served on committees or otherwise helped, by appointment or request, in the work of the association during this past wonderful year.

All together these groups held over 75 separate meetings during this administration. The assistance, cooperation and enthusiastic support of our state association secretaries, staffs and members has been a great help to us.

In the past three years I have attended many state conventions so I know from actual experience what your work has meant to the telephone industry. And I also want to express my gratitude to the members of the USITA staff in Washington headquarters. They have work and responsibilities that increase constantly, but I know they are assuming the load and doing an excellent job.

Without the generous cooperation of all these members, often performed at a considerable sacrifice of their own time and effort, we simply could not have carried out our program. All of us are tempted to take things like this for granted. But, now that my own tour of duty is nearing its close, I want to go on record as stating that never once did I fail to get all the help and cooperation I asked for.

Again may I say "thank you all very much" as I salute you in this—Independent telephony's finest hour.

# REPORT OF EXECUTIVE VICE PRESIDENT

*Continued from page 29*

rected. The larger companies with their superior financial resources and ability to employ qualified personnel can ordinarily look after their own interests. While an organization such as ours is important to them, it is manifestly of greater importance to the small companies many of which because of their lower earnings position are unable to attract trained employes.

The smaller companies occupy a critical place in our membership. Because of their large numbers they are helpful when legislative problems arise. The larger companies also have an important part to play. Without the financial support which they provide it would be impossible for the association to offer some of the services which are taken for granted by smaller companies. It takes money to employ competent talent in a trade organization, no less than in an operating company, and to provide the number and quality of services which a dynamic industry experiencing rapid growth requires.

On the association's full time staff are men of judgment and maturity who have established reputations in the fields of law, public utility regulation, advertising, public relations, engineering, radio, marketing, toll compensation, and statistics. A non-profit trade organization under the law is not permitted to individualize its services to its members. It must devote its ener-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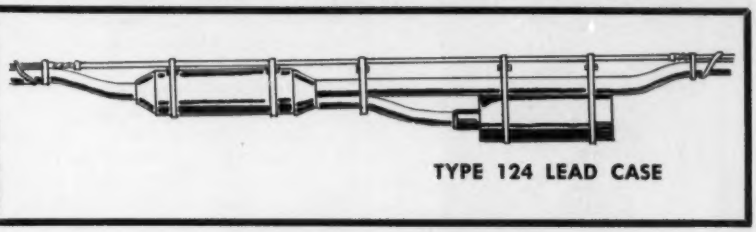
IN CUSTOM MADE LEAD OR STEEL CASES
FOR USE ON LEAD OR PLASTIC CABLES

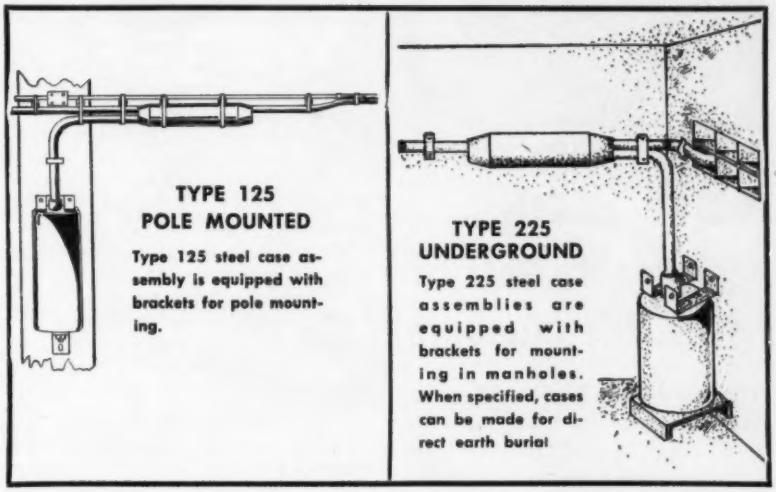
TYPE 124 LEAD CASE FOR AERIAL MOUNTING



TYPE 124 LEAD CASE

STEEL CASE ASSEMBLIES

- ALL LEAD STUB ASSEMBLIES ARE PRESSURIZED
- ALL PLASTIC STUB ASSEMBLIES ARE HERMETICALLY SEALED



TYPE 125
POLE MOUNTED

Type 125 steel case assembly is equipped with brackets for pole mounting.

TYPE 225
UNDERGROUND

Type 225 steel case assemblies are equipped with brackets for mounting in manholes. When specified, cases can be made for direct earth burial

Voice frequency coils, type 632(88MH) and 638(44MH) are primarily designed for use on two wire telephone cables. Types MF10, MF11, 641 and 642 coils are furnished for quadded interoffice and toll cables. Special coils can be made to meet other requirements.

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No. 1958-AR

# NEW KLEIN
## Replaceable Gaff Adjustable Climbers

These new Klein Replaceable Gaff Climbers assure maximum quality and safety. We recommend leg irons be replaced after three sets of gaffs have been used.

The easily replaceable gaff is held in position by a self-locking screw. Full impact is absorbed by the gaff and leg iron. No load is transmitted to the screw.

Adjustable to 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½ and 19 inches. Made in matched pairs, right and left. Available with triangular ring at ankle or riveted ankle loop. Aluminum finish. Every climber individually tested.

**WRITE FOR BULLETIN 559**

Bulletin 559, giving full information on Klein Replaceable Gaff Adjustable Climbers, will be sent on request.

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Foreign Distributor: International Standard Electric Corp., New York.

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gies to the common problems of the industry it represents.

*Work on Toll Compensation.* At the time this report was being prepared, there were indications that agreement with Bell System representatives had been reached on needed upward adjustments in toll compensation. The adjustments, which were yet to be cleared by Bell System representatives with Bell associated companies, did not represent all that our Toll Compensation Committee believes our Independent companies are entitled to, but are as large as Bell representatives were willing to recommend on the basis of data submitted to them, and in the absence of new special studies by a representative number of Independent exchanges over the country.

If the adjustments are finalized, it is anticipated that the over-all effect, based on estimated 1959 volume and application to all companies, will be an increase to Independent companies in the neighborhood of 12 million dollars on an annual basis, or about 9 million dollars to companies settling on the average cents-per-message schedule. The revised schedules will be made effective, at the option of the affected individual Independent company, within 30 days of the offering by the Bell associated company.

The 12 million dollar addition applied to a rising volume of messages and an increased ARPM should produce 1959 settlements well in excess of the approximately 204 million dollars received from interchanged message toll business in 1958.

It is probably unnecessary to add that any company dissatisfied with the average schedule basis of settlement, after the before-mentioned upward adjustments take place, is still entirely free to make its own special study and negotiate a different settlement with the appropriate Bell associated company.

As will be reported in more detail by our toll committee, agreement has also finally been reached with Bell System representatives on settlement arrangements for private line services, a matter that has been the subject of discussion between the two segments of the industry for almost 14 years. Assuming that Bell associated companies and Independent companies accept the recommended new arrangements, as anticipated, there will be an increase in the revenues of Independent companies from private line service of from $500,000 to $750,000 on an annual basis.

In the summer of 1958 a task force prepared a USITA separations manual for Independent company use to underlie message toll settlements. Particular attention was given to the needs of the smaller companies. The manual was later reviewed by the committee and its Sub-committee on Message Toll Compensation. Copies were furnished representatives of the Bell System in February of this year for review and comment in the hope that the manual could be jointly recommended.

In the early part of last summer, several joint meetings were held by our committee and it sub-committee with Bell representatives in an effort to reach agreement on the contents of the manual. Little progress has been made. Our experts are of the view that the manual is in accord with the broad principles of the separations manual of the NARUC and entirely appropriate for settlement purposes. No suitable alternative plan has been offered by Bell representatives.

Under the circumstances our Executive Committee in June on recommendation of the Toll Compensation and Settlements Committee authorized the printing of the USITA manual and its distribution to Independent companies, regulatory bodies, and other interested parties. This was done last month.

*National Advertising Program.* In a report submitted last March to our board of directors, our Advertising Committee asked, "Are we desirous of identifying the Independent telephone industry, seeking expansion capital, promoting adequate rates, attracting capable personnel, building goodwill and public confidence, and promoting the American system of free enterprise?"

Most Independent telephone people would answer this question in the affirmative. It is because of this that our national advertising program was embarked upon in 1954.

Modifications and changes are made in our advertising from time to time in order to make it more effective. The program is reviewed at policy levels four times each year, twice by our board of directors, and twice by our Executive Committee. And, in between meetings of these bodies, our Advertising Committee maintains close supervision.

The program with a changed facade and pitch, as conditions warrant, is conducted for us by the J. M. Mathes Advertising Agency in New York.

*Telephone Advertising Institute.* The Telephone Advertising Institute is an organization in Chicago which was brought into being in the early '40's under sponsorship of the USITA board of directors to provide advertising material at low cost for Independent telephone companies. Creation of the institute satisfied a long-felt need within

our branch of the industry for a medium which on a mass production basis could develop advertising material for use at the local level by telephone companies whose revenues do not permit them to engage such service individually. Service is available to any Independent company on a subscription basis at surprisingly modest rates.

The institute furnishes to subscribers periodically advertising copy and mats for newspaper use. Other usable material includes placards for window and commercial office display, and quickie radio announcements.

Quarterly meetings with the institute's representatives are held by our Advertising Committee in order to keep the agency abreast of developments in the industry and acquainted with current operating problems. At no cost to our association, the institute is conducted by the nationally known advertising firm of Bozell & Jacobs, whose address is 205 North LaSalle Street, Chicago.

We are glad to record that a substantial number of additional Independent companies have recently become subscribers to the TAI service.

*Effective Telephone Marketing Means More Sales, Improved Service, Greater Profits.* There are about 125 million telephones in the world. Sixty-seven million—about 54 per cent—are in the United States, a nation with only 7 per cent of the world's population. Thus the United States has by far the greatest telephone saturation of any nation on the face of the globe. In spite of this, about one family in five still has no telephone. In the families without telephones there are marketing possibilities which should be tapped.

It is estimated that by 1975, 16 years from now, the population of our country will be more than 235 million, 59 million more than today. By 1980 the population will be 250 million, 74 million more than in 1959. With this continuing rise in the number of people there are tremendous opportunities for service and for legitimate profit.

Most people will apply for telephone service without solicitation. Many more will have to be sold through intelligently devised, dynamically conducted marketing campaigns designed to acquaint the hesitant or uninformed with the advantages of twentieth century communication. This means studying the needs of people. It means market research. It means sales campaigns carried on by trained sales forces.

A number of Independent companies, especially the larger ones, have already undertaken marketing plans and achieved measurable success. Recognizing in this situation an opportunity for leadership in developing promotion campaigns, the USITA two years ago created a Telephone Marketing Committee "to consider the general philosophy of telephone marketing and the most effective methods and mechanics of selling telephone service, and to develop recommendations for the information and guidance of member companies."

The committee was also given the following instruction:

"The committee shall develop ways and means of promoting new products and services and of encouraging wider use of existing services and communication facilities. Since the activities in this field of one or more companies may create customer demand for certain service facilities in other companies, the committee should accumulate and coordinate information from all available sources within the industry and make such information available to member companies accompanied by suggestions as to how it may be profitably used. It shall also be the function of the committee to develop recommendations for the information and guidance of manufacturers and suppliers in the Independent branch of the industry."

The Marketing Committee's concept

say "Lindsay"
when you order
For friendly, prompt, complete service in telephone supplies, more and more leading companies say "Lindsay" when they order. Lindsay specializes in telephone supplies only—warehouses a complete line of the finest nationally known brands.
THE LINDSAY TELEPHONE SUPPLY CO.
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OKOIDA
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*It's New!*

**NOW–AT LAST A MEASURING WHEEL THAT MEASURES ACCURATELY TO A FRACTION OF AN INCH!**

Rolatape's amazing new Model 415 meets all your measuring needs — measuring quickly and surely over the most uneven and irregular terrain with no risk of human error. This time-saving instrument is calibrated to measure accurately in full view of operator as it is rolled along, giving measurements in inches (to ½ inch) on one side of measuring wheel, and tenths of a foot (to .5 of a foot) on the other. Sturdy and lightweight, it is equipped with automatic brake and built-in stand. Handle folds compactly. See one at your dealer's today.

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is "profit-boosting through idea-sharing," and its philosophy of marketing and sales is embodied in the slogan "Effective Marketing Means More Sales, Improved Service, Greater Profits."

*Work of the Committee on Military Liaison.* An investment of more than 2 billion dollars by the communications industry will be involved in connection with nationwide communication systems for the military and federal civilian agencies. These programs include the United States Air Force Semi-Automatic Ground Environment System (SAGE), which will provide early warning of the approach of hostile aircraft; communication networks for activation of a number of missile installations from which missiles to intercept enemy aircraft and retaliatory missiles will be launched; and expansion and refinement of the Federal Aviation Agency's nationwide communications network which provides weather information and other data for aircraft flight control purposes.

An indication of the impact of these programs on our branch of the industry may be obtained from the fact that more than 200 of the installations are scheduled to be located in Independent territory. These include 16 major installations some of which will require multi-million dollar plant investments. The service requirements which must be met are generally higher than those normally encountered. The telephone companies in whose operating territories the installations will be located will benefit substantially from them as they are expected to produce annual revenues in excess of one-half billion dollars.

Our Military Liaison Committee which has responsibility for maintaining liaison with the military, other federal defense agencies, the Bell System, and the Independent manufacturers relating to these matters, has found it necessary to meet on a number of occasions with representatives of the organizations indicated. It has also met with representatives of a number of Independent operating companies to alert them to what is involved and assist in protecting their interests.

A number of Independent operating and manufacturing companies are participating in these programs. One of the major problems confronting our committee is that of prevailing upon Independent telephone companies, having installations scheduled in their franchised territories, to undertake the large investment necessary to provide at commercial, or standard tariff rates, the necessary equipment and facilities to meet defense service requirements.

Some Independent companies have

COTTON
Serviceable for all around uses. Standard everywhere.
NYLON
Smooth texture, easy to handle. Preferred for switchboard use.
NEOPRENE
Very popular because easy to keep clean. Moisture and grease proof.

*Runzel*

**CORDS**

**the WORLD'S FINEST**

**...for every purpose!**
**...for every instrument!**

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry large stocks of cords to meet every need. Our geographical location means Quick Service.

**RUNZEL CORD & WIRE CO.**

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entered into agreements authorizing their connecting Bell companies to serve these installations either in whole or in part. There are other instances where Independent companies have entered into agreements before obtaining the benefit of discussions with their manufacturers or our committee and later found it would have been in their interest to refrain from entering into such agreements.

*Third Michigan Engineering Seminar.* For the third consecutive year a Telephone Engineering Conference was held during the summer at Michigan State University, sponsored by the USITA, through the Sub-committee on Engineering Education of the association's Committee on Engineering. The conference this year ran from June 28 to July 17, and is looked upon as another highly successful gathering.

The conference had 43 participants representing 29 Independent telephone companies. This compares with 35 in 1958 and 47 in 1957. So far a total of 60 firms have been represented during the three-year period, including six manufacturers and suppliers.

Special emphasis during the conference is given to economic subjects, the relationship of earnings to capital requirements, and the necessity for coordination between all departments, including building, commercial, cost, equipment, plant, production, traffic, transmission, factory and sales engineering. The theme of the program is "A course designed to help engineers of all telephone companies get maximum utilization of every construction dollar."

*Second Management Development Program.* The second Management Development Program for Independent telephone executives was held at the University of Kansas from July 12 to Aug. 7, with 24 participants. Like the Engineering Conference above mentioned, the Management Development Program is sponsored by the USITA, through its Personnel Committee. At graduation exercises on the last day, addresses were delivered by USITA President Barnhart and Dean James R. Surface of the Kansas University School of Business.

The program has been acclaimed as a successful one. It was embarked upon because of a widespread feeling that the dynamic growth of our industry called for more and better trained management and executive talent. The course pays special attention to the following broad subjects: (a) Functions of administration, (b) the American business climate, (c) rate regulation, (d) control and financial administration, (e) human relations in business,


CONDEX MULTIPLE CONCRETE CONDUIT

SPOTTING OF CONDUIT ALONG RIGHT-OF-WAY ADJACENT TO PROPOSED TRENCH

NOW AVAILABLE IN ALL THESE SIZES: 2, 4, 6, 8 and 9 DUCT

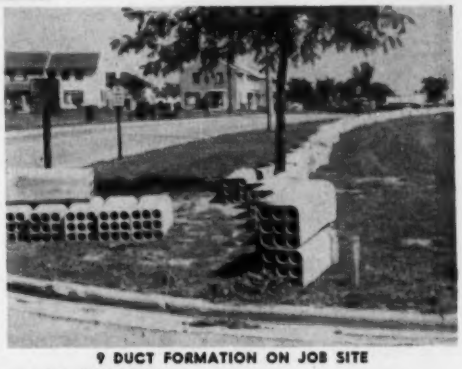
Special fittings—miters—short lengths—expanded web sections available, also adapters to claytile, transite and fiber duct.

CONVENIENT

Delivery can be made to jobsite on 24 hours notice. Condex may be installed in any weather, even in trenches holding water. Ditches can be covered as soon as installation is made. Due to low breakage factor, jobs can be estimated more accurately.

STRONG

Pittsburgh Testing Laboratory tests show: compressing strengths of 10,000 lbs. PSI: water absorption of 3.9%; load test-failure at 74,000 lbs. From a telephone company report on Condex multiple-duct concrete conduit—"it is obvious that no trouble was experienced in cable placing operations, no evidence of excessive abrasion on the lead sheath." Smooth bore is obtained by mechanical honing.



9 DUCT FORMATION ON JOB SITE

ECONOMICAL

Multiple-Duct Concrete Conduit is manufactured with a bell-end joint, eliminating the use of plastic or mortar bandages with dowel pins, for joining. A joint sealing compound, applied with a pressure gun, is all that is needed and cost of this joining operation is less than 3½c per trench foot for both material and labor.

Single crews have installed 1,600 to 1,800 trench feet of conduit per 8 hour day, with two to three less men than with other types which require mortar bandage joints.

Breakage factor of concrete conduit is less than 1%, due to strength of product.

FOR FULL INFORMATION—CALL OR WRITE YOUR LOCAL LICENSEE, OR THE PARENT COMPANY

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Illinois 7-1515

CHICAGO PRE-CAST PRODUCTS CORP.
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Franklin Park, Illinois
Gladstone 5-8116

UTAH CONCRETE PIPE CO.
379—17th Street
Ogden, Utah
Export 2-7513

ELMORE CONCRETE PRODUCTS CO.
Div. of North Star Concrete Co.
Elmore, Minnesota
Elmore 52

EMPIRE CONDEX, INC.
6700 Mad River Road
Dayton, Ohio
Tuxedo 5-7051

WESTERN CONCRETE PIPE CO.
3501 Power Inn Road
Sacramento 19, California
Hunter 6-0026

T. E. L. PRE-CAST PRODUCTS CORP.
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New Smyrna,
Edgewater, Fla.
Garden 8-9881

J. E. EVANS CONCRETE PRODUCTS CO., INC.
Shelbyville, Indiana
Express 8-9734

AMERICAN CONCRETE PIPE CO.
(Sub. of Amer. Pipe & Construction Co.)
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Phoenix, Arizona
AL 2-7566

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(f) merchandising, (g) administrative policy and planning.

*Storm Damage Insurance.* During the past year a Special Committee on Storm Damage Insurance has been created by USITA. It consists of C. D. Ehinger, Decatur, Ind., *Chairman*; W. F. Firstenburg, New York, N. Y.; and Houghton Furr, Lincoln, Neb., a group well qualified to handle a difficult assignment.

The committee's duties have been prescribed as follows:

"The duties of this committee shall consist of making a survey of the storm damage insurance problem of Independent telephone companies, carrying out an exploration of insurance companies which may offer suitable insurance at reasonable premium rates, and making a report of its findings to the Executive Committee or the board of directors by Nov. 15, or as soon thereafter as practicable."

There are various parts of the country where at certain seasons of the year climatic conditions add to the operating woes of telephone companies. Some companies are their own insurers, setting enough aside each year out of earnings to meet probable demands for rebuilding outside plant damaged by sleet, snow, windstorms, etc. Most Independent companies, however, are not in the fortunate position of being able to enjoy the status of insurers. The high level of premiums has been a deterrent to buying insurance from commercial companies.

More than 20 years ago, our association made a study of the storm-insurance problem. Much information was assembled but no insurance company was found that could furnish the desired protection at premiums Independent companies could afford to pay. Consideration at that time was even given to the desirability of forming an insurance company, within the framework of our association, that could deal with this situation in a practical way; but difficulties in the path of forming such a company proved too formidable.

Since announcement was made of the appointment of the present USITA committee, several insurance companies have already shown an interest in cooperating in an effort to find a solution to the problem as it exists today. At this stage in the committee's short life, it is too early to know whether developments in the insurance field in recent years will now justify insurance companies in offering storm damage insurance at acceptable rates. Our committee is diligently engaged in carrying out its assigned duties, contacting insurance companies far and near and accumulating valuable information.

If the past year has been one filled

with a vast amount of activity for our operating companies, it has certainly been filled with work for your association, its committees, and its full-time staff. The number of things crying to be done has a way of increasing in a trade organization seemingly in direct ratio to the extent of the growth, complexity and number of problems of the companies comprising it.

But, if the number of our problems has increased and the tempo of our labor has been stepped up, so have opportunities for usefulness to the communication entities that maintain the association. In the carrying out of our duties, we have been grateful for the cooperation given us by the management of many companies, our board of directors, state association secretaries and the loyal and helpful members of our 36 committees.

## REA FINANCING FOR LARGE COMPANIES

*Continued from page 32*

was economically feasible other than through an REA loan.

We have another company in Minnesota that has been financed by REA funds since 1950. The privately financed company sold these exchanges to the REA financed company at the net book value approved by the Minnesota Railroad and Warehouse Commission and the REA.

In 1950, when the original loan of the Minnesota company was approved, the REA office in Washington insisted that the REA company have a management contract with the larger privately financed company at cost.

It would be my opinion that the Washington office of the REA would insist on a similar management contract between REA and privately financed companies and between more than one REA company, regardless of the geographic location of exchanges.

The management contract covers management, engineering, accounting, commercial, traffic, purchasing, central billing, taxes, insurance, hospitalization, pensions and payroll services. Other than direct charges, costs of these services rendered to the associate company are allocated on a main station basis and are actually quite simply applied.

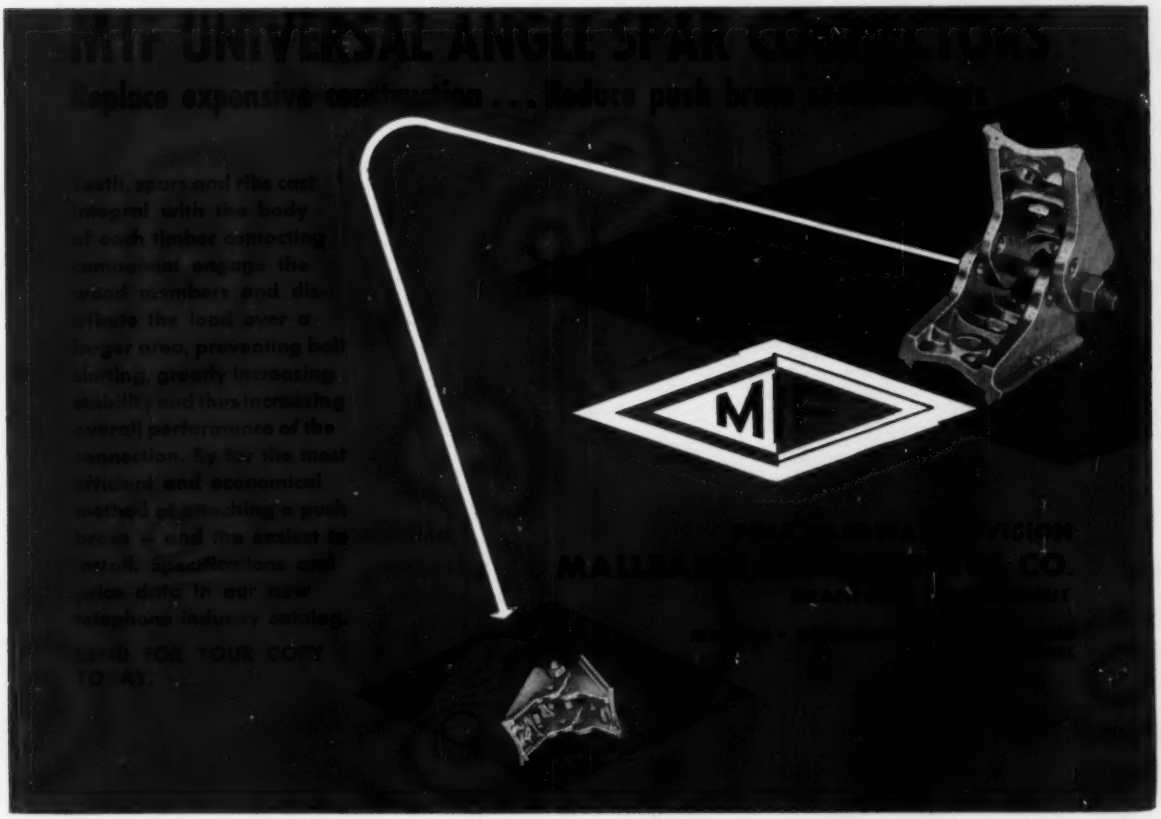
The latest USITA statistical volume shows there are 3,867 Independent operating companies serving at least 50 per cent of the geographical area of the United States. Of that number, 463 are commercial REA borrowers and 210 are cooperative borrowers.

By simple deduction, there are 3,194 Independent companies in the United States that do not have REA loans. Many of these companies do not operate in the sparsely settled areas of the United States, however, since the REA telephone loaning agency was enacted into law on Oct. 28, 1949, loans amounting to $585,212,415 have been approved.

This expenditure brought initial modern dial service to 542,028 subscribers and improved service to 668,-314 subscribers, a total of 1,210,342 potential toll users that could bring toll revenue to every telephone company in the United States including AT&T and Bell associated companies.

I have been informed that, based upon population trends, to ultimately reach the saturation point of telephone subscribers, the rural communication system in these United States is only 30 per cent completed.

Our company is one of the oldest REA borrowers and because of that fact it is one of the largest, I speak



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for all officers and employes in offering our congratulations to REA Administrator Hamil and his splendid staff for the very efficient administration of the congressional intent of the REA Act on their 10th anniversary.

Personally, I would rather operate under an REA loan than under most bank mortgages, regardless of interest rates, sinking fund and equity requirements and provisions for depreciation and maintenance.

The reason—no one knows the rural telephone business on a national scale better than Administrator Dave Hamil and his most efficient staff. Naturally, Independent companies, REA borrowers and non-borrowers, claim some of the credit for the REA success through the advice and guidance of the REA Consulting Committee and the splendid cooperation of all segments of the telephone industry.

## ACCOUNTING COMMITTEE

*Continued from page 34*

committee of the NARUC in New York City on Feb. 26 to discuss a proposal to change accounting methods relating to handling of station apparatus, station installations and drop and block wires. There followed a number of meetings and a volume of work and eventually the so-called simplified station accounting procedure became a reality. I am not so sure the originator of this title was aware of all the complexities involved or we might have had a slightly different title. To say the least I have heard the procedure called by less complimentary phrases.

The FCC issued a report and adopted an order under date of Sept. 19, 1956, prescribing the change in accounting regulations on the handling of station apparatus, service connections, small private branch exchanges and booths and special fittings. For the companies under FCC jurisdiction this order became effective on a voluntary basis as of Jan. 1, 1957 and mandatory on Jan. 1, 1958. The state regulatory commissions followed the pattern and in most cases for companies under state regulations this change became effective on a voluntary basis as of Jan. 1, 1958 and mandatory on Jan. 1, 1959. There now remains only the handling of this important accounting change with the Internal Revenue Service.

During the past year, it has been my privilege as chairman of the Accounting Committee to be the chairman of the Sub-committee on Mark-Sensing. The additional members of this special committee are Paul H. Henson, Kenneth L. Lawson and D. A. Perigo, representing the engineering, commercial

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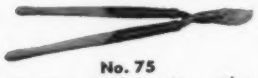

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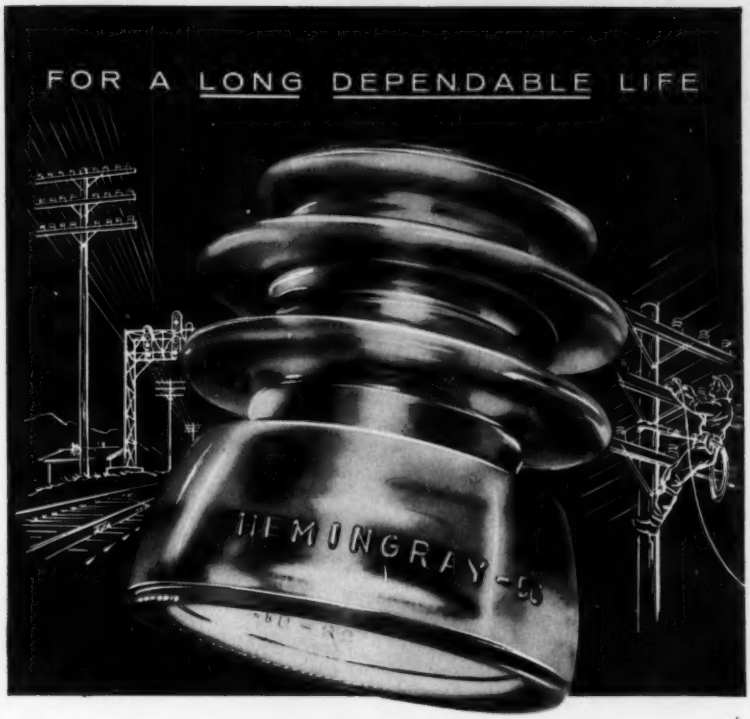
and traffic committees of the USITA, respectively.

The increasing use being made of mechanized accounting and billing procedures by both branches of the industry has indicated a need for close coordination between Independent and Bell System operating companies in order to achieve a greater degree of uniformity and standardization of the design and preparation of mark sensed toll tickets. In order that all companies may continue to interchange toll ticket information, it is mandatory that any toll ticket developed for mark-sensing have the required information in the same columns on the ticket so that a detecting machine can recognize and make available all the required data.

The first step in coordinating the efforts of the Independent and Bell System companies was a meeting in May, 1958 held in Chicago and attended by the USITA Accounting Committee and representatives of the AT&T company. There was recognized by the Accounting Committee, as a result of this meeting, the need for a special committee which would include in addition to accounting the experience and knowledge of engineering, commercial and traffic departments. The USITA board of directors saw fit to follow the recommendation offered on the need for a combined effort and the sub-committee on mark sensing was appointed.

The original meeting of this new committee and AT&T representatives was held in Lincoln, Neb. in July, 1958. It immediately became apparent that to accomplish the full purpose on the mark-sensing program, a joint effort and release would be necessary to notify all companies of the necessity of standardization of preparation and use of a mark-sensed toll ticket. A great deal of time and effort was employed in arriving at a result which would be acceptable to all of the branches of the industry. The final draft on this work was completed in April, 1959 and a joint report on mark sensing toll tickets by the USITA Accounting Subcommittee on Mechanized Operator Toll Ticketing and Bell System representatives was included with the USITA letter, dated May 7, 1959 and distributed to all member companies. The same report was furnished to all Bell System operating companies. Since that date there have been some changes incorporated into the procedure and no doubt additional changes will be required as is necessary with any new developments of any progressive industry.

In closing the accounting report for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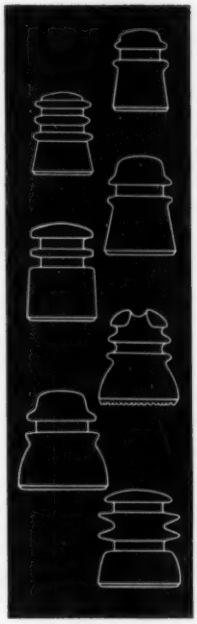

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the last year, I would like to express my appreciation to the members of the committee for the fine cooperation and also to the members of the Washington staff who have been quite helpful when assistance was required. The members of the Accounting Committee feel that increasing attention must be devoted to the accounting problems of our industry, as we are living in a world in which rapid changes are being made. The development of new techniques and the changed attitude on the part of regulatory groups present a challenge to our accounting personnel and we must meet this challenge with renewed efforts to evaluate this change for the management people of the member companies in our association.

## BUDGET RESPONSIBILITIES OF MANAGEMENT

*Continued from page 39*

sponsibility of revenue requirements to project both the timing for and the amount of increased revenues necessary to maintain earnings at a satisfactory level.

After determining the total amount of such revenue requirements, the distribution thereof, as between what should come from increased tariffs, improved toll settlements, and/or increased marketing efforts, will be determined by top management and, subsequently, superimposed as a separate item on the balance of the budget as representing the over-all program for the successful operation of the business.

(7) *Financial Plan.* This section should show the income statement, balance sheet, and financial plan resulting from the summation and correlation of all the separate phases of the budget outlined above.

To implement the budgeting principles outlined above will impose upon accounting the necessity of making a comprehensive review of the accounting reports. To the extent that budget preparation and responsibilities are realigned, so also must the reporting of actual results, be realigned to conform therewith. This approach ties in with the term we often hear referred to as "responsibility accounting," i.e., the practice of reporting to each responsible manager the results of his operations during an accounting period in a manner to segregate costs between those for which he is directly responsible and those over which he has only indirect control.

A prime requisite in the development of such reports is that each be exactly tailored to the need and the scope of the particular area manager and/or department for which it is designed. To provide inadequate detail is to under-equip the manager for the control functions he must exercise, to provide more than significant detail will tend to make the use of such reports burdensome and fruitless.

In outlining the requirements of such a budget procedure, I have to this point purposely avoided any discussion of the problems to be encountered by accounting in producing the data necessary to make such a program operative. Obviously, the usual methods of reporting and recording under the provisions of the FCC standard system of accounts fall short of the needs of such a procedure. It should not be assumed, however, that the preparation of such management reports will materially increase the cost of record-keeping. I feel sure that a great deal of time and effort is already being spent in preparing other reports which, because of their limitations, offer little in the way of management tools. I believe, also, that the substitution of meaningful data for inadequate reports will make possible a degree of effectiveness which will far offset additional costs, if any.

It is the determination and development of the type of reports required which is the greatest challenge to accounting and the operating departments. It appears this phase should be pursued in three stages and patterned to meet the organization setup of any particular company.

(1) A comprehensive breakdown of the company in recognition of lines of authority and scope of responsibility. This will require that responsibility of each level of management be clearly defined in relation to the department involved and the company organization as a whole.

(2) The development of measurement reports to provide significant data in regard to levels of efficiency or productivity. These reports must cleave directly to the lines of responsibility, as discussed previously, and provide a basis for the projection of improved operations in future budgets. This requirement poses the problem of establishing a basis of measurement for different phases of telephone operations against which actual results may be analyzed. I believe the Plant Committee of the USITA has made some progress in this direction and the measurement of maintenance expenditures seems to be the area in which a major step in this direction can be made.

(3) The development of accounting reports for management, which compare budgeted and actual expenditures by areas of responsibility. By using such reports in conjunction with the measurement reports referred to above, each manager can judge and be judged

as to his ability to manage both in respect to dollars expended and productivity levels attained.

Summing up, I would define the budget as an instrument of management control, required by the company to assure the maintenance of a satisfactory grade of service to the customer on a continuing profitable basis.

Let intensive planning be our objective in budgeting; the establishment of ambitious, but still attainable, goals is far superior to submission to trends. A budget program, with definite objectives offers the greatest incentive to management when each level of that management, has a part in establishing those objectives and has at hand the tools of accomplishment.

In closing, let me urge each of you to review your budget procedure with a view toward making it a more effective "profit management" tool by delegating the responsibility for budget preparation and for operating thereunder, as far down the chain of command as is consistent with the capabilities of the individuals involved to fully appreciate the profit motive of our business. In some companies, this may extend down to one level above a construction foreman, and, in others, it may not extend below the general manager. An analysis from this point of view may, as a side benefit, reveal the need for further management training. For, after all, no methods or procedure can produce results without people sufficiently trained to know how to use them effectively.

## MECHANIZED ACCOUNTING

*Continued from page 46*

niques by adding considerable strength to the system of internal control. Improved clerical accuracy, timely reports, and virtual elimination of record alteration, intentional or accidental, have contributed to this strength. The new concept of internal control and the introduction of integrated electronic and automatic data processing go hand in hand.

### *Machine Processing Controls*

Another important factor in the determination of the adequacy of audit trails in mechanized accounting, particularly with reference to computer installations, is the strength of the machine processing controls. Since these are highly technical devices, I will attempt only to identify the more commonly used techniques.

Machine processing controls can be divided into two general groupings: Built-in checks and program checks.

Built-in checks are incorporated in the machine by the manufacturer to


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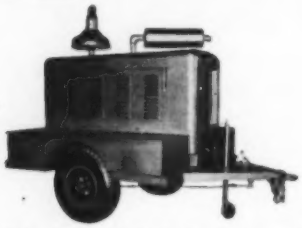

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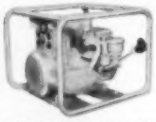

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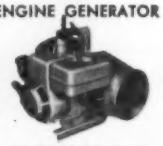

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monitor the transfer of data with the system. For example:

Parity checks are used to monitor the transfers of numbers from machine to tape, tape to machine, or infrequently internal transfers within the computer. An extra binary bit is added to or omitted from each character so as to make an even (or odd, depending upon the equipment) number of bits. An attempt to transfer an odd (or even as the case may be) number of bits will either stop the machine or throw it into an error routine.

Duplicate circuitry will provide the means for independently processing the same functions and automatically cross checking results. Repeated arithmetic checks will perform a similar function on an automatic basis.

There are other checks in use which similarly employ the redundancy feature.

Program checks are introduced into the machine accounting program and may include:

Limit checks which require a result to fall between predetermined amounts.

Record counts which compare the number of items processed with a predetermined total.

Hash totals which have no significance in themselves, such as the sum of employe clock numbers, but serve as a control total.

Reasonable checks which are similar to limit checks except that the limits are variable depending upon one or more other factors.

Sequence checks which insure that a file is in correct sequence. Manual intervention control which causes a record to be made on a separate tape whenever the machine is stopped either by the console operator or automatically. The tape, sometimes called an audit tape, may be made inaccessible to the machine operators.

There are many other checks available to the programmer for use in checking the clerical accuracy of the system.

### *Audit Trails*

After, and only after, a proper evaluation of internal control has been made and an understanding of the machine processing controls gained, can consideration be given to the nature and extent of audit trails.

Audit trails may take the form of print outs or internally stored trails. Both can be costly if not thoughtfully applied.

A complete trail of printed information would provide the means to audit every transaction, as was formerly possible with the manual systems. But, this possibility by no means furnishes strength to the system of internal control nor provides a logical method of audit.

Too often, the printing of data may


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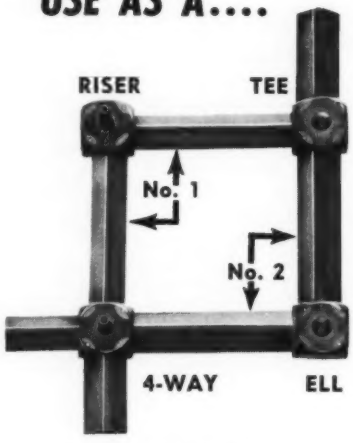


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be introduced into the program at intermediate stages of the data processing without adequate justification. After the system has been installed and various listings are generated the question arises—"who wanted all these lists?" The auditor is often blamed. Yet, the auditor's principal tool is the test—he may only want to examine 2 per cent or 3 per cent of the items in any listing.

Obviously, it is a waste of machine time to generate a listing that is put to such limited use. A listing, while furnishing an excellent audit trail, acts as a drastic brake on the orderly processing of data, loads the output facilities of the equipment, and creates a very real storage or filing problem.

There are alternatives to the complete print-outs, which, in many instances, will provide very adequate audit trails. The data actually printed out may be limited to variations from a predetermined norm. For example, in a payroll application, the listing could include only the employes whose average hourly earnings exceeded a certain dollar amount which could be varied by job classification. This is an adaptation of the programmer's machine processing control (limit check or reasonable check) with limits set within the bound of reason but of sufficient variation from a norm to be of interest to the auditor.

The preparation of a tape reproduction of the data being transferred at a given point in the process is an alternative to the printed list. A listing can be prepared from the tape reproduction at some later date if requested by the auditor. Consideration might also be given, in some instances, to relying upon the reprocessing of input data as the most expedient means of furnishing an audit trail. If the print-out is used in any form, it will be expensive. I suggest that, in the long run, it may well be less expensive to prepare a listing of selected accounts for audit purposes from the original source data than it would be to program a print-out into the regular routine.

In addition to the creation of audit trails by the print-out method or variations thereof, it may be possible to back-trail at any point in the process to the original source material. One means of creating a back trail is accomplished by storing the code for the most recent transaction and reproducing it in the next succeeding output. This is particularly useful when data are introduced in random order.

Audit trails which can thus be programmed should more than satisfy the most finicky auditor. The true problem underlying the creation of adequate


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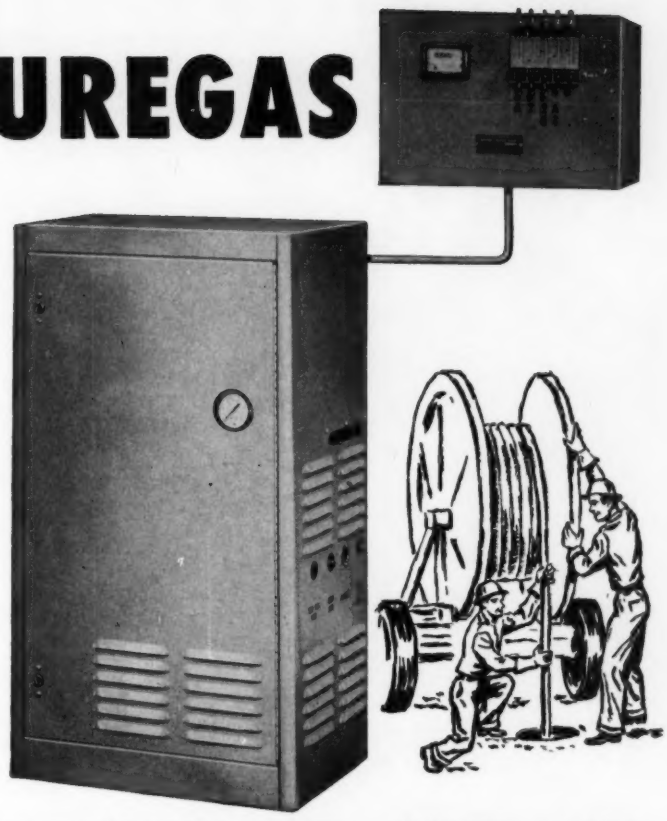

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THIS TRENCH IS COSTING ONLY 1 CENT PER FOOT

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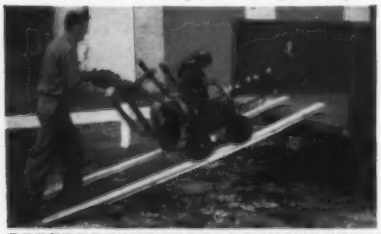

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Please send literature on POW-R-SPADE:

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audit trails does not relate to the capability of producing the trails, but rather to limiting the trails to only those which will serve a useful audit purpose. Generally, the requirements of management in respect of printed information will furnish the auditor with sufficient data to permit a post-review of transactions.

Adequate audit trails, to the auditor, are only those which are required to compensate for weaknesses in the system of internal control or take the place of machine processing controls. The introduction of machine accounting, whether electronic or mechanical, requires a reappraisal of the system of internal control — only then may the adequacy of audit trails in the data processing routine be determined.

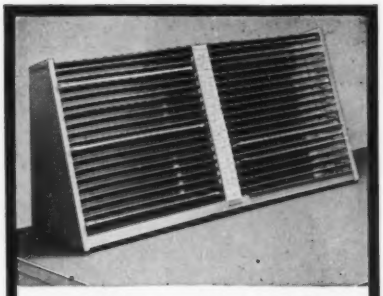
## RATE PREPARATION

*Continued from page 49*

the importance of the full acceptance of the burden of proof on *every* issue by the companies applying for rate increases. What I have just said with respect to the importance of adequate proof in the depreciation area applies equally well to every other issue that is involved in any rate case. Unless the company seeking the rate increase accepts the burden of proof and submits evidence ample to support the position they take, they cannot expect the commission to hold with them.

One of the primary considerations of a commission in arriving at its decision is the probability of their decision being upheld if it is carried on appeal to a court. In order for a commission to expect a court to uphold its decision, the decision must soundly reflect the evidence submitted in the case. If the evidence supporting the sound view is lacking, and the only substantive evidence in the case supports what the commission may know is an unsound position, it is hard pressed to come up with a decision supporting their fundamental belief. Much bad law has been written because companies fail to recognize this necessity in accepting the burden of proof.

Another matter of importance to accountants in rate matters is my third point. I refer here to the important challenge and the opportunities of good public relations handling of the facts in a rate matter. I will admit that at first blush it may seem that it is stretching the responsibilities of the accountant a bit to indicate that they have a public relations function. The basic justification of any rate change is in the interpretation of the accounting results of its operations. There is no doubt of the public's interest in any



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Telephone Office Equipment

*to lighten your work and improve efficiency*

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For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54" x 25" top covered with masonite. Height 36". Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.

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For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30" x 60". Height 36" at front, 42" at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½" high, 14" wide, 18" deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

*Color of all units: Baked-on gray enamel unless otherwise specified.*

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action which affects their bills for utility service. Because the matter is newsworthy, the newspapers attempt to keep the public informed. All too often this attempt results in misinformation, because the company has not done an adequate job of interpreting its accounting results to, first, its public relations staff; second, the newspapers; and third, the public itself.

It has been my observation that in those cases where a good public relations job has been done in connection with rate cases, the course of the proceedings and speed with which the end result is reached are relatively smooth and timely. On the other hand, it has been my observation that where a poor public relations job has been done the case is fraught with troubles, opposition, delays, and perhaps even compromise of what would otherwise have been a sound end-result.

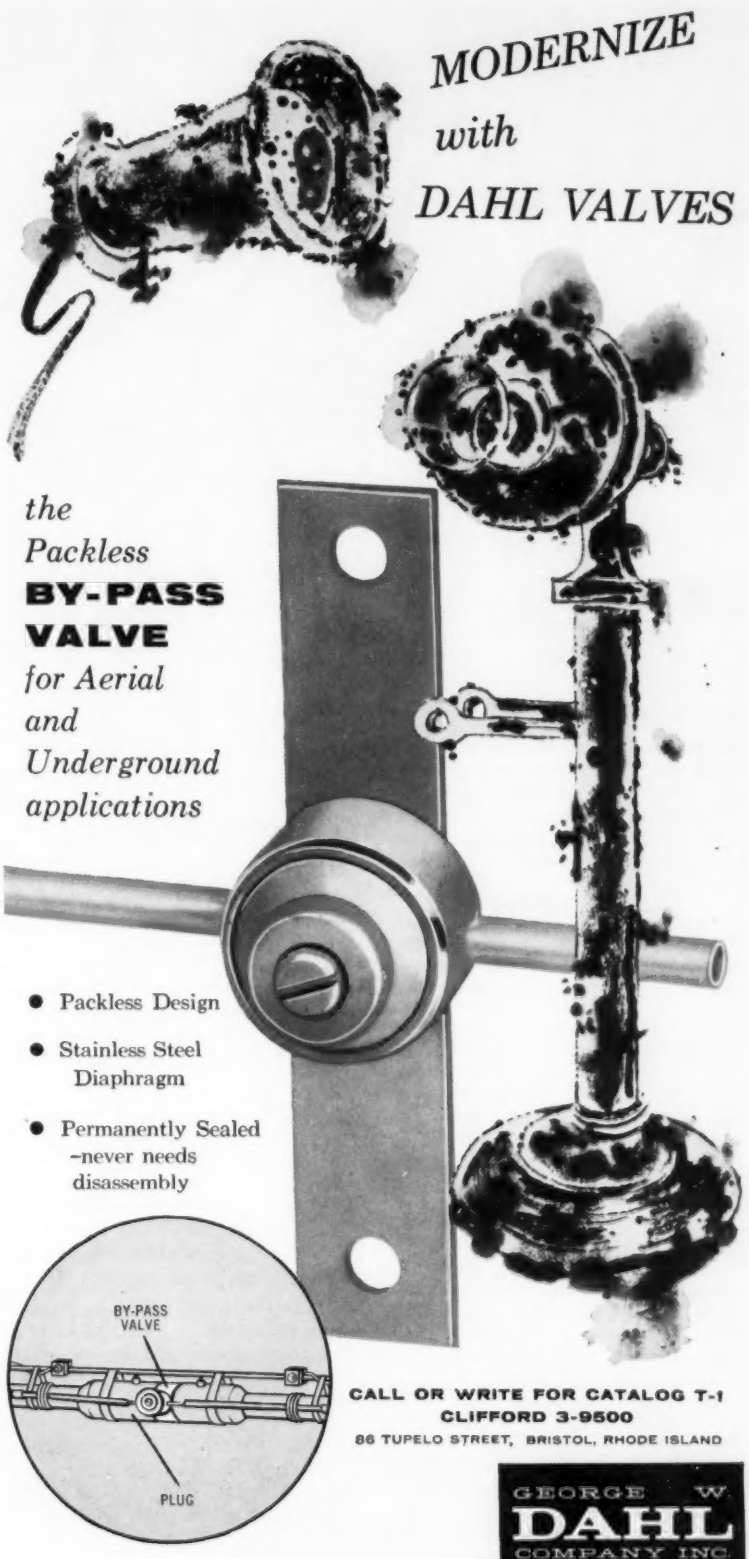
I have no simple formula to pass on to you people on how to handle this important phase of informing the public. I only point out to you the kind of a challenge which I think this aspect should present and the opportunities which its effective handling affords.

I can only emphasize that it is extremely important for the accountants to properly analyze and interpret the financial statements which will not only be a guide for management, but should be so qualified and explained for the benefit of the persons who may be neither accountants nor executives.

Each of the points I have discussed thus far, having to do with depreciation, acceptance of the burden of proof, and the importance of good public relations handling, are matters which are common to any type of utility rate presentation, be it telephone, electric, or gas. There is one other matter I would like to mention, which is specific to the preparation for telephone rate cases. This has to do with what I regard as the special importance of accurate station count at each year-end. While some companies make it a routine practice of inventorying stations at the end of each year, it has been my experience that many do not take such inventory routinely.

In this latter case, when a rate proceeding comes along it is almost inevitable that a station count at the end of the test period will be required sooner or later. It may be required at both the beginning and the end of the test period. Further, it may need to be brought up to date, if the case lags to any considerable length beyond the expiration of the test period.

It will be obvious to you that if it is necessary to develop the station count during the course of the rate

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**MODEL TR — For portable and field use. Accuracy and stability are combined in this laboratory instrument, with small size, light weight, easy use and ruggedness necessary in a carrying instrument.**

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A completely transistorized Unit, most economical in battery consumption, size and weight. Requires no warm-up time.

High stability of the unit is achieved by two independent feedback loops, precision resistors and printed circuit wiring. High input impedance and freedom from fluctuations, hum and capacitance of power lines save time and assure better testing of carrier, communication circuits and equipment.

—50 DBM to +50 DBM, 11 ranges in RED. .003 to 300 volts, 11 ranges, in BLACK. Input impedance, 2 megohms shunted by 25 micro-microfarads. Accuracy 5% of full scale, 100 cycles to 500 KC. Meter reads RMS value of sine wave voltage. Reading is proportional to average value of impressed voltage.

Self contained 500 hour mercury battery. Aluminum case and cover with aluminum handle for carrying and support for unit on bench at an angle for easy reading from above or side. Size: 6½"x4"x3". Weight 2 lbs.

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proceeding itself rather than in advance of such proceedings it can only contribute to the regulatory lag. Or, if the case proceeds without an accurate station count on which to base the expected results, the accuracy of the end-result may be materially impaired, and, in my experience, this frequently has so happened.

Certainly, each state has its own particular statutes within which it is mandatory for the state commission to stay. If the station counts are used prior and beyond the date certain accurate station count is extremely important.

My point to you is that regulatory lag is costly. Some regulatory lag is inevitable. I urge you not to unnecessarily contribute to additional regulatory lag by not adequately anticipating the type of station count that will be needed and most helpful.

I have touched upon only a few of the many facts that have importance in rate preparation and the proper presentation of evidence in rate cases. Virtually every aspect of such preparation and presentation involves the accounting results and the accounting departments of the companies concerned. I can't stress too much the importance of giving these matters adequate attention, and full acceptance of the burden of proof by you, as accountants, for your respective companies.

The fact that a regulatory staff reviews your work does not indicate they are superior in knowledge to you as the company's accountant, and if adjustments are made by a regulatory staff member, you, the company accountant, should be prepared to dispute said adjustments if they are incorrect.

The data on your exhibits should contain only facts that you can support, and each proceeding should be so presented and supported by the record that it could be taken to the court for review without any likelihood of its being upset. The case does not end when a regulatory commission or even a court issues its final order.

There is what might be termed a "silent investigator," or a security analyst, or an investigator, who not only reviews the end-results which, of course, is the commission's order, but they also keep informed as to the results of that order. Certainly, we do not hear from them directly and I suspect you may not hear from many of them directly, but the results of their investigation are reflected in the price you pay for any new securities that may be offered for sale. Good results are worth the effort it takes to make them so.


# OUTSIDE PLANT HARDWARE

**BOLTS**
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**BRACES**
Flat, Drop Angle, Vertical, Alley Arm, Back, Extension Fixture, and Guard Arm.

**CLAMPS**
Guy, Crossover, Span, Cable Suspension, Ground Rod, Lashing, and Grade.

**GUYING**
Anchors, Rods, Strain Plates, Hooks, Thimbles, Attachments, Bolt Eyes, or Eyelets, Eyenuts, Straight and Angle Strand Eyelets, Lift and Load Plates, Guy and Straight-Away Loops, Saddles and Plates.

**BRACKETS**
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**PINS**
Wood, Forged and Pressed Steel with wood or lead tops.

**WASHERS**
Round, Square, Curved and Lock.

**STEPS**
Pole and Manhole.

**NUTS**
Regular and Lock.

**GROUND RODS**
Galvanized or Copper Covered.

**UNDERGROUND**
Cable Racks, Supports, Insulators, Pulling-In Irons, and Manhole Ladders.

**SAFETY DEVICES**
Self-Centering Safety Top Rungs and Ladder Leg Equalizers.

**CABLE EXTENSION ARMS**
**MESSENGER HANGERS**
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**OTHER:**
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**Utilities Service Company**
**ALLENTOWN, PENNA.**

## AUTOMATION ASPECTS

*Continued from page 58*

tance Dialing comes to any area. The public must be properly and adequately informed on just what class of call can be accepted by DDD. In many cases, it will mean further revision of subscribers' bills.

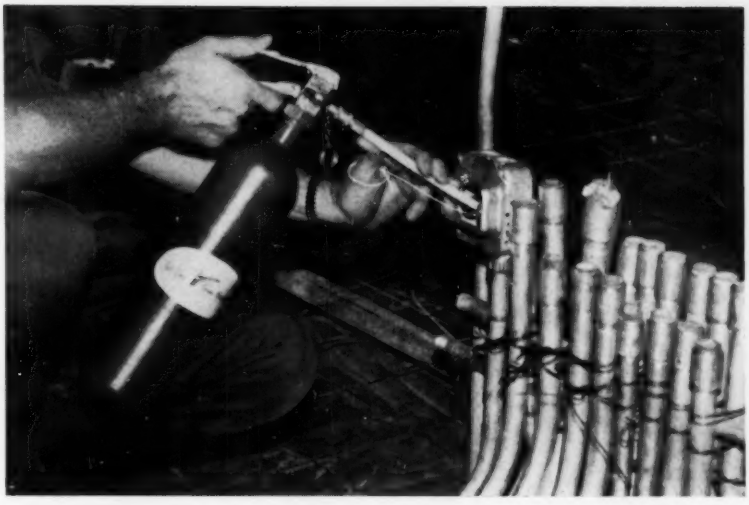
### *Directories*

We obviously want to continue to be a technological leader. Let me give you one example of what I mean. Our oldest technological implement happens to be the telephone book. This is the one part of our communication system that has not changed technologically since the first city-wide installation of the telephone. I am sure that many of you will agree that the alphabetical book is fast becoming obsolete, and there are some very clear signs that it is—the increase in the calls to information in the big cities, cost of books, and the cost of replacing them. Indeed, if you live in most large metropolitan areas, in order to be able to use a directory, you have to have detailed geographic local knowledge, such as only the chief of detectives can have, to use the book altogether.

And, now we are getting into a period of Direct Distance Dialing and are committed to making it possible, with a very few years, for every subscriber in the continental United States to call every other subscriber. Technologically, this is no longer a problem, but the alphabetical telephone book surely will become a casualty of this advance. What good would long distance dialing be to us if we still had to retain our full complement of telephone operators to give people numbers? Actually it would be self-defeatist. Here is, therefore, a big product timing job, a technological one, and commercial people must be prepared to cope with its impact upon our subscribers.

Let me say in conclusion that we are again in a situation in which I think telephone company people haven't been for a long time; namely, the situation of inadvertently thinking of adventuring into the new rather than carrying out a well-tested battle plan—a well-tested strategy in which the problems were known and in which the right behavior was, if not predictable, at least not mysterious.

Today, again, as were our predecessors 50 years ago, our company managers are in a situation where vision, courage, wisdom, and integrity are not only needed but will produce very great results. There is no group in this country—no managerial group—which has a greater and prouder heritage of

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Jet Line Cylinder

eliminates snaking in ½" and ¾" conduit!

The new Jet Line Cylinder makes short work of wiring ½" and ¾" conduit . . . saves up to 70% of wire-pulling costs . . . can pay for itself on one or two jobs!

Now you can lay a line through one . . . ten . . . even fifty conduits in minutes, regardless of lengths, bends, or loose obstructions! Place a line package in the conduit; secure the free end of the line. Butt the Cylinder seal-off assembly to the end of the conduit and activate the valve . . . pressure, from the expansion of a harmless gas, travels the lightweight line package through the conduit in a split second! The strong nylon line, laid by the package, is used to draw polyethylene rope, then wire, through the conduit in minutes!

The Jet Line Cylinder is safe, no inflammable substances or explosives are used, and nylon line and polyethylene rope are non-conductors.

Kit contains: Cylinder, valve, pressure regulator, valve operating mechanism, and full pressure attachment with variable head. Cylinder refillable; spare cylinders available. Order a Jet Line Cylinder Kit now . . . forget fish tape forever!

OWN THE COMPLETE JET LINE SYSTEM *

Jet Line Cylinder for ½" and ¾" Conduit • Jet Line Gun for Conduit 1" or larger

Be prepared for all conduit wiring jobs, carry the *complete* Jet Line System . . . Cylinder and Gun. SAFE, QUICK, SURE, the Jet Line System, invented by experienced electricians, has been thoroughly job tested. Compare its speed and simplicity with long hours spent in snaking . . . count the time you save in dollars!

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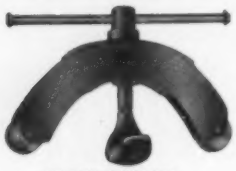

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**MEMORANDUM**

**TO:** Company Managers

When you buy rebuilt products,
buy them where they were made!

For rebuilt TELEPHONES
SPRING JACKS
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and many other items rebuilt as good as new, go directly to KELLOGG!

These dependable Kellogg products have all been rebuilt with original factory parts, with the same service and inspection used on new equipment.

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Communications Division of
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such vision. The achievement of our predecessor group of 50 years ago is still unmatched in American business. It is going to be our privilege and our responsibility to match if not to exceed it.

## TRANSMISSION

*Continued from page 68*

agreed to adopt the following ground rules and immediate objectives:

(1) That the activities of these committees will not invade contractual relationships between Bell and Independent companies.
(2) That the committees will work within the framework of existing policy, however, they may from time to time recommend changes in such policy.
(3) That the committees will develop and coordinate a program for providing acceptable transmitted and received communications throughout the state.
(4) That, if the need should arise, the committees would undertake projects in specified fields of interest to the committees and prepare data and application of these for use by the committees and for possible dissemination to individual companies.

It was the opinion of both the Independent and Bell committees that they could perform a much needed service for the whole industry in the state, and that they should deal with transmission in all of its aspects as they relate to providing facilities for communications from one subscriber to another.

At a subsequent joint meeting of the pilot committees it was decided that there was an immediate need to coordinate the code assignments in the state, in order to avoid conflicts in future and prospective extended area service and DDD arrangements.

They also decided to develop, immediately, a basic toll route map of both Bell and Independent facilities throughout the state, including future facilities.

In January of this year, the state associations were requested by the USITA to set up committees to work with the USITA engineering sub-committee. In June, a general information memorandum was prepared and distributed outlining the progress to date of the pilot committees in South Carolina, suggesting a method of organizing and giving a suggested program.

For the program it was suggested that the committee develop coordinated plans and proper transmission on—

(1) Code assignments and DDD arrangements.
(2) Intertoll trunks.
(3) Toll connecting trunks.

(4) Extended area service and inter-office trunks.

(5) Subscriber loops.

Eleven states now have appointed or assigned committees to do this work. They are: California, Florida, Georgia, Illinois, Nevada, Ohio, Oregon, Pennsylvania, South Carolina, Texas and Virginia.

There is still a sizeable task before the industry to bring communications facilities over the nation up to the new standard. As the nationwide telephone system takes shape with universal operator toll dialing, customer dialing of station-to-station calls, and the recent development of customer dialed person-to-person calls, it will become increasingly difficult to continue to satisfy our subscribers without making this new service available.

We have now reached a stage in the development of this nationwide system when coordination is no longer a luxury but a necessity. The public has time and again demonstrated in exchange rate cases, where the service is less than they desire that they are unwilling to accept additional rates without service improvements; however, they have shown a willingness to accept the rate that is necessary for modern and improved service. It seems consistent to me that this same attitude will prevail concerning the nationwide service. If this is true, is it not wise that we undertake to make this service available as soon as we can, before outside pressures require that it be done?

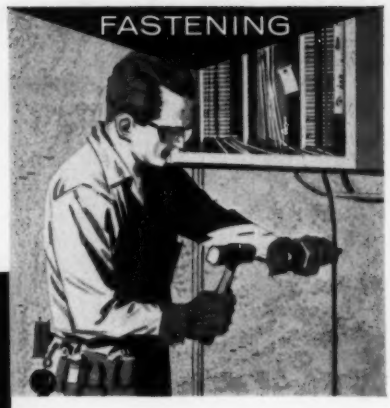
Under our free enterprise system, our strength is derived by what we do together voluntarily and through reason, rather than that which we are forced to do. The plan for state TCI committees gives the opportunity at the state level, where personal contact is possible, to develop greater team work—teamwork between Independents, themselves, and between Independents and the Bell companies. There is a strong feeling on the part of some in both segments of the industry that the service these committees render should include any engineering matters which are inter-company in scope.

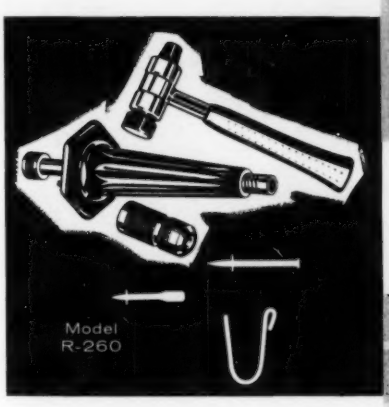
Of the 3,749 telephone companies listed in the 1958 TELEPHONY's Directory 2,895 had less than 1,000 stations in service, and 1,965 of the 2,895, or two-thirds, were still operating exchanges which had not been converted to dial.

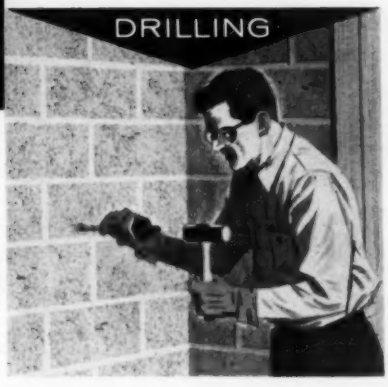
It is my personal view that the USITA and our state associations have here an excellent opportunity to render a splendid service to all of our members, and particularly the smaller companies.

This is brought home more forceably


COUNT ON SHURE-SET

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Use of Shure-Set has increased tremendously in the telephone industry during the past six months. Shure-Set gives cleaner, faster, surer fastening . . . increases efficiency, reduces worker fatigue. Ask your supplier or write direct for complete information on Shure-Set R-260, specifically designed for telephone applications.

*In addition to hammer-in Shure-Set, the versatile Ramset Fastening System includes Ramset powder-actuated tools for heavy-duty fastening, and Ringblaster heavy-duty kiln gun.*

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**TEMPERATURE REGULATING STANDS** Automatic devices for controlling tip-temperature while iron is at rest—prevent overheating of iron, eliminate frequent retinning of tip, while maintaining any desired temperature. Available with heavy-gauge perforated steel guard—protects user's hand.

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# LASHING WIRE

WE PRODUCE

The finest lashing wire possible because we believe . that lashing wire is one of the important parts of the cable plant, its duty being to hold the cable to the messenger for the life of the plant.

•

WE COIL

The best coil possible because we know . that tangled or out of shape coils can cause spinning trouble, waste and delay

*Write for Complete Information*

CABLE SPINNING EQUIPMENT CO.

Topeka Kansas


when we realize that in these small companies, in most cases, the plant manager, traffic manager, commercial manager and engineer are all the same person.

The state Transmission and Communications Improvement Committee has a real opportunity to be a dynamic force in bringing about more speed, reliability and quality in all service furnished by Independent companies.

If you are asked to serve or have the opportunity to assist your state TCI committee, it is hoped that you will give your wholehearted support.

## PRESSURIZING CABLE

*Continued from page 86*

approximately 154,000 stations are now receiving varying degrees of protection.

We are striving continually to improve our operations. As an example, we have recently found it more economical to use plastic tubing than copper tubing for interconnections between the dryer units, the meters, and the cables. We estimate that this will save 60 to 70 per cent of the installation cost. Another economy was brought to light recently in the form of flow raters on our panels in place of meters. We found that the flow raters are less costly and just as effective. We have recently assigned a supervisor to work full time with our plant staff in developing continuous feed pressure system practices and to outline detailed duties and responsibilities for employes of each work group involved in this operation. Our engineering department now is issuing job plans which show both new and rearranged cables in relationship to existing dry-air pipelines. Plugs, test valves, end-pressure switches, and associated pressurization controls are indicated on all cable drawings.

A further refinement to our pressurization plan is the zoning of exchange cable plant in order to provide optimum protection to major feeder routes. Feeder routes are zoned according to the size of the cable—the largest cables being contained in "Zone A." As the cables decrease to a predetermined size, the area is classified as "Zone B," and so on down. An over-all map of such an exchange area will show concentric circles fanning out from each central office.

I would like to briefly summarize the major steps we are following in Honolulu to put this new plan into effect:

(1) Establish a priority list of the offices in need of cable protection.

(2) Plug all cables in the vault of the office selected.

(3) Select and install the proper size compressor-dehydrator unit.

(4) Establish feeder route zones for the office.

(5) Install pressure test valves along "Zone A" where the sheath diminishes to less than 600 pairs and record pressure readings at the time the valves are placed.

(6) Do only enough routine work on the cables with the lowest testpoint readings to obtain about 6 pounds pressure at the "Zone A" test valves.

(7) Repeat these steps in each successive office until "Zone A" protection is assured.

After the cables in "Zone A" are adequately protected, concentrate on cables in "Zone B," etc. This plan provides relatively inexpensive insurance during the time the cables are being progressively routined to obtain positive pressure throughout all important sections.

At the beginning of my talk, I mentioned the loss we suffered during a storm that hit the island of Oahu on Nov. 28, 1954. Let me tell you what happened 3½ years later, and then you can judge for yourself whether or not cable pressurization is worthwhile.

On Mar. 6, 1958, the weather forecast was: "Overcast skies and intermittent rain, heavy at times. For Wednesday night and Thursday, continued cloudy with frequent showers."

This proved to be the understatement of the year. The official 24-hour report was 17.80 inches at the Honolulu Airport, 17.41 inches in downtown Honolulu, and as much as 24 inches in some parts of the island. This is about ½ our annual rainfall for Honolulu. The 17.41 inches of rain in downtown Honolulu broke an all-time record of 13.52 inches established in 1917. Automobiles were completely covered in some places; roads and homes were damaged; and many of our underground cables became submarine cables overnight. Remembering how costly the 1954 storm was with 9 inches of rain, and how many telephones were out of service, we shuddered to think what twice as much rain would do.

In the November, 1954 storm with 9.27 inches of rain in a 24-hour period, we experienced 253 cases of cable trouble, some of which were in 2,100-pair cables, and received in excess of 10,000 subscriber reports. In the March, 1958 storm, with almost 18 inches of rain within a 24-hour period and with 30 per cent more telephones, we had 105 cases of cable trouble, most of which were in small cables, and only 3,178 subscriber reports. Expressed another way, our cable plant sustained 30.1 service-affecting sheath breaks per 100 sheath miles of cable in 1954, before pressurization, and 10.5 sheath breaks in 1958, after pressurization. This rep-


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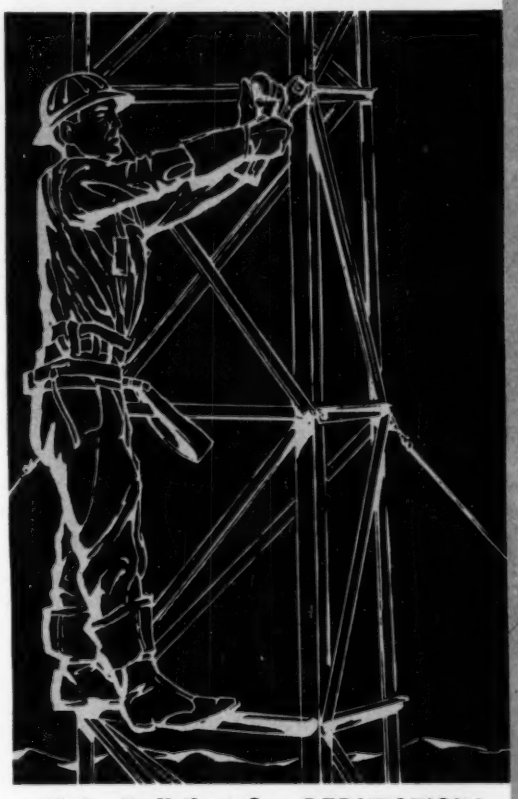

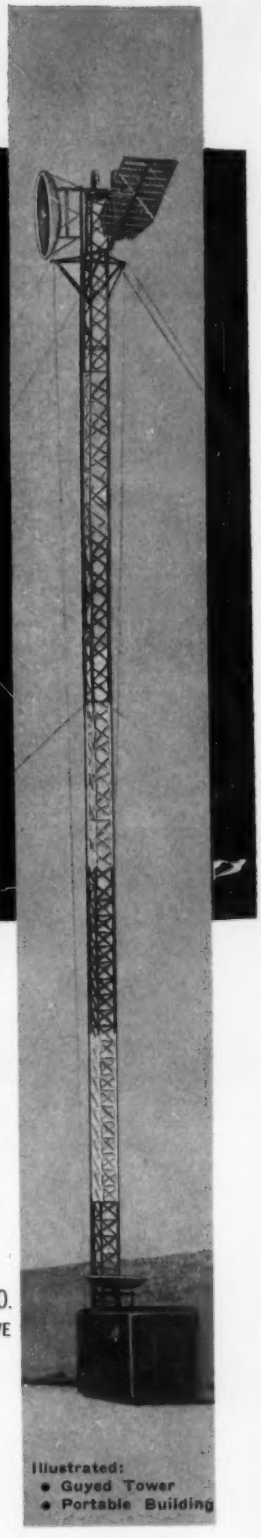

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resents a reduction of 65 per cent in the number of service-affecting troubles after the cable plant was pressurized.

Pressurizing telephone cable plant is very worthwhile—not only in reducing maintenance costs, but what is equally important — maintaining uninterrupted telephone service to subscribers.

## TRAFFIC ECONOMICS

*Continued from page 128*

fore someone gets real honest and tells us the real reason for leaving. This, then, is another area to watch carefully in connection with force turnover.

### *Incidental Absence*

Since the traffic department works on the basis of every manual call being hand-tailored to suit the requirements of the customer at the time it is handled, the absence of one operator may be exceedingly important to the service within the office. Incidental absences lead to the necessity of call-ins and the call-ins may require the payment of premium time, and may also result in schedule changes later in the week. Even if this were not the case, the additional time spent by the chief operator or traffic clerk is time when something more constructive could be done.

We pointed out the requirement for permanent employes while discussing the subject of turnover. Here, under the subject of absence control, we find associated items such as good health being a requirement, and also in the matter of selection is the case of the young mother with her baby sitting problems when she is at work. We know that if she cannot get someone to stay with her children she will not be on the job. A third item in this connection is the matter of interest in the job and interest in the subscribers so that operators do not permit minor items to cause them to be absent from the office.

### *Customer Instruction*

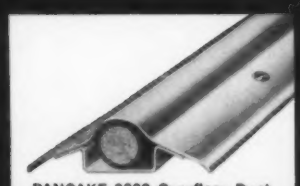
One of the primary objectives of a customer instruction program is to be sure that PBX operators and other large users understand our operating practices and cooperate with us in placing their calls. A poorly-trained PBX operator can cause a great deal of lost time at our switchboards simply by the way she places calls, putting a burden on our operator to get all the call details straightened out.

Another item that enters into the customer instruction program is that of charge quoting. Whenever reductions can be made in the number of charges quoted to the customer we can reduce our expenses in the traffic department. We make every effort to have the customer do his own internal bookkeeping controls. This becomes a very serious task when, for a long period of years, a company has given the PBX customer just about everything he has asked for. We find, however, that in building up the confidence of the customer in our methods, he is more likely to go along with our normal ticketing and billing procedures.

A very thorough customer instruction program is a must when you shift from operator handled traffic to customer dialed. DDD has no value to the operating company unless the subscribers use it. This reminds me of the story of the sales manager for a dog food company who was giving a pep talk to his salesmen and, after pointing out all of the wonders of their dog food, suddenly said, "Then why is it that our sales production is at the bottom of the list of all the dog food companies?" He was amazed when one salesman got up and said, "Boss, I think maybe it's because the dogs just don't like it."

The same thing applies to DDD. If we don't have people liking it, they won't use it and, if they don't use it, we can't make money on it. Therefore,

for use with
CALL DIRECTOR . . . .



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a good solid customer instruction program will pay us dividends.

### *Dial Office Management*

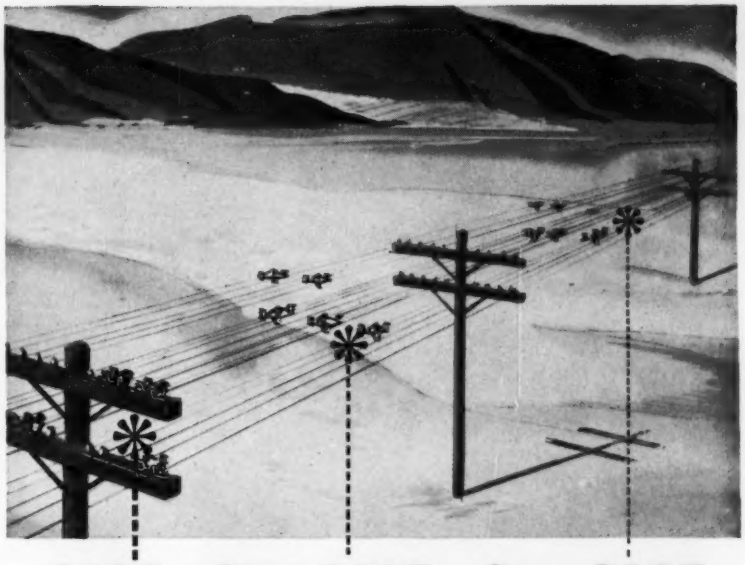
Dial office management is a very important traffic function, and one on which it is rather difficult to place a measurement in dollars and cents. One of the principal parts of this program is that of line and terminal allocation. Perhaps use of the word allocation is new to you. We use it to differentiate from line and terminal assignment, as used in our plant department, and which covers other items. As a matter of fact, we had a couple of old-time line assignment men in the plant department who showed some resentment about the traffic department making line and terminal assignments, but when we changed the designation from "assignment" to "allocation" they were all in favor of the program.

You will recall that, at the outset of this talk, I stated it was the responsibility of the traffic department to try to complete all offered calls regardless of how they were handled, whether by an operator, or by customer dialing. We feel very strongly that through the proper allocation of lines and terminals (thereby creating load balance throughout the dial units), the traffic department is contributing materially to the grade of service rendered in our dial offices. We have many instances where the traffic department has been able to reduce the number of switches at various levels of the machine by properly balancing the traffic through the machine. These savings, of course, show up in the investment and the expenses associated with investment.

Probably the most important effect is that all of our subscribers receive substantially the same grade of service. In other words, if we are short on equipment some place in the office, we still have the equipment balanced and everyone's service is then of the same grade. We have eliminated the cases where one group of subscribers has very poor service and all of the other people in the office have good service.

### *Statistics*

My last item concerns statistics and the part a general office plays in the economics of the traffic department. Statistics, records, or whatever you choose to call them, become important because they represent the only method by which you can appraise the results that are being accomplished. This does not mean that a lot of records are required. It has more peculiar reference to the quality of the records, those which are easily understood and interpreted. Our general offices are responsible for methods and

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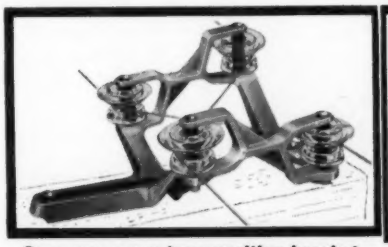
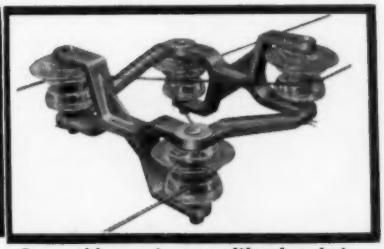


Case cross-arm transposition bracket



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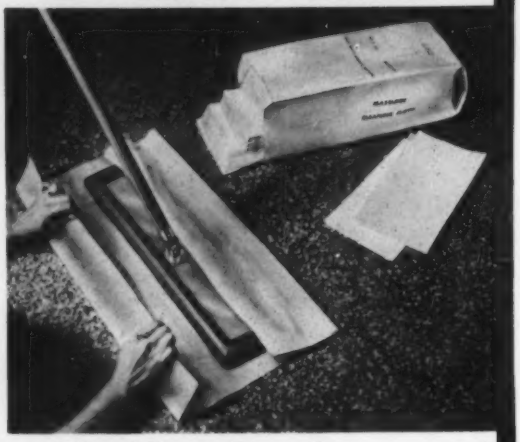

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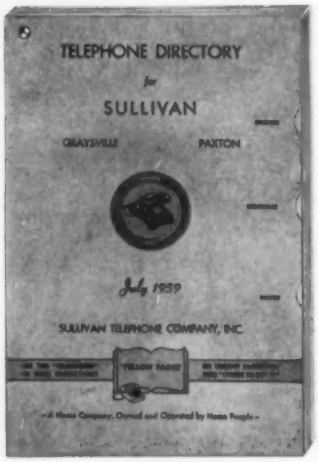


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results and the only way to find out what is going on is through the statistics. Some items of work in the general office must be accepted as necessary. For example, the issuing of general instructions, the review of operating practices, processing of rate and route information, etc., cannot be avoided. We do not employ people in the general office for the sake of creating jobs or for the purpose of doing things because some other company does them.

Our statistical system has two primary objectives. The first is to keep top management informed concerning service and costs. To illustrate this, I can tell you that, for 12 months ending July 31, 1958, our company's average answer on CLR was 5.9 seconds and for the 12 months ending July 31 this year, it was an even 6.0 seconds. The cost per thousand units last year was $13.82 and this year $13.24.

The second objective is to assist our field forces to meet our service and economic objectives. You have, of course, recognized that with an average answer for the company of 6.0 seconds, some offices were above and some below. The relation of speed of answer to tickets per operator hour, which I mentioned under force adjustment, is reducing costs in some offices and improving service in others.

### *Summary*

You will recall that early in this talk I said that the discussion would be based on the results of our own experience in the West Coast Telephone Co., and it does not necessarily follow that you should do these things as we have done them. However, in the matter of traffic economics if careful attention is given to the cardinal points of service objectives, force adjustment, training, force losses or turnover, absence control, customer instruction, dial office management, and the use of statistics, surely better results will be yours.

Perhaps it is a little odd that you have a general manager talking to you about traffic matters, but why not when it consumes 27 cents of our expense dollar? And it's pretty hard to find any manager who isn't interested in expense control, whatever the department. This brings me to just one last thought: In the West Coast Telephone Co. we do not have a most important department. We have only departments that are needed in the operation of our business, and each of these departments is dependent on all of the others. We firmly believe that the success of a company is dependent upon successful departments and each one must constantly develop and apply proper economics to its operation.


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The miniature member of the family is also used in the event of contact between the power and communication circuits, in addition to furnishing considerable protection from lightning damage. This protector is furnished with alloy cover, a bracket for mounting and 3 copper wire leads.

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# Courts and Commissions

## Get Sale OK; Approve Financing Plea in Arkansas

The Arkansas Public Service Commission has authorized the sale of the Madison County Telephone Co., Huntsville, to the Madison County Telephone Co., Inc., it was reported on Oct 9 (TELEPHONY, Sept. 5).

Sellers are J. Curtis Shrum and Roma Jean Shrum who will have stock in the new corporation.

The commission also granted the company new rates effective on conversion to dial service.

•

Also in Arkansas, the Cleveland County Telephone Co., Inc., Rison, was authorized to borrow $120,000 from the Stromberg-Carlson Co. and to sell 440 shares of stock.

## Equity Petition Asks Maine Court to Modify PUC Ruling

In a procedure never before tried in the state of Maine, the Central Maine Power Co. has asked the Maine Law Court to upset a commission ruling which authorizes rates considerably less than the company had requested.

This new method is an equity petition in which the full court is asked "upon its independent judgment (to) review, modify, amend or annul said decisions, orders and rulings of the commission to the extent of the unlawfulness thereof . . ."

Questions from the bench asked whether the company was asking the court to set a new rate and to disregard entirely the commission decision —in other words, to treat the case as if it had been submitted on report by a full transcript of evidence and arguments as if no ruling of any tribunal had intervened.

Company Attorney Vincent L. McKusick said that this was in effect the method of handling the case as he interpreted the Maine statutes, but he denied the law court was being asked to "fix the rates."

Peter N. Kyros, commission attorney, argued the company's petition seeks "judicial rate making" which in effect would circumvent the Maine legislature which empowered the commission to regulate utility rates.

McKusick said this remedy is clearly provided in Maine law.

The company contends, that the commission, by striking from the company's property schedule items or amounts which it considered unjustified and by making certain other adjustments had in effect "confiscated" property against the requirements of the Maine constitution.

## Missouri Company Granted Permit to Extend Service

The Grand River Mutual Telephone Corp., Princeton, Mo., it was reported on Oct. 3, has been given authority by the Missouri Public Service Commission to provide telephone service to Sheridan residents and to adjacent areas in the territory now served by the Sheridan Farmers Mutual Telephone Co.

The Grand River company contended that the Sheridan company was a defunct corporation and had lost its power to operate as a telephone company. The commission, however, considered the application on the basis of adequacy of service.

## Rates for Special Telephones Tariff Changes Asked in Neb.

The Lincoln Telephone & Telegraph Co. on Oct. 9 asked permission of the Nebraska Railway Commission to:

• Include in its tariff an offering of a telephone designed for use in locations where there is danger of explosion. These telephones would be encased in special housings to minimize the chances of blasts from sparks resulting from operation of the instruments. A monthly rate of $5.00 was requested, in addition to the rate for the regular service, and regular installation charges would apply. The rate would apply to wall or desk type telephones in common battery or dial exchanges.

• Discontinue the $10 monthly charge for the attendant's cabinet used for automatic ringing in type 4D and 4E dial private branch exchange systems. The request stated that the provision of this feature does not now require the special attention that it did initially and it was believed that the elimination of the charge would help stimulate sales.

• Eliminate the initial period contract of five years for installations of multiple line equipment. The petition

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stated that this would make multiple line equipment offerings compatible with those of PBX systems on which the five-year initial period clause was removed in the commission's order of July 31, 1959.

• Provide a minimum service period of three years and a construction charge of $100 for switching subscribers of the Geneva exchange who had applied to the company for its rural service. The company asked that the $100 charge should be established for a five-year period so that subsequent applicants would pay their fair share of construction costs involved in serving the area.

## Alabama House Passes Relocation Payment Bill

The Alabama House of Representatives on Oct. 2 passed a bill requiring the state to join with the federal government to pay the cost of moving telephone lines and other utility facilities from their present right-of-ways position in connection with the interstate highway system.

This bill provides for paying costs of relocation for both public and municipally-owned utilities.

A similar bill, providing for payment to public utilities only, was offered in the legislature two years ago but was not passed.

## Authorize Sale in N. D.

The sale of the Deering Telephone Exchange by Allen Swartwout to the Souris River Telephone Mutual Aid Corp., Minot, was approved on Sept. 22 by the North Dakota Public Service Commission. The sale was announced by Mr. Swartwout.

## Mo. Telephone Association Holds 3 District Meetings

The Missouri Telephone Association held district meetings at Cameron, Macon and Springfield during the week of Sept. 7. Scott Gault of LaPlata, president of the association, presided.

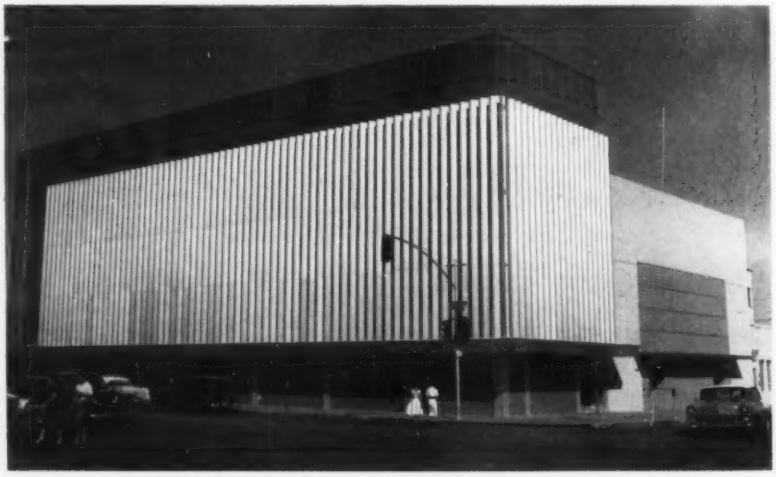
At each morning session, J. L. Van Horn, president of the General Telephone Co. of Missouri, gave an informative talk on "How To Create A Better Business Climate In The Telephone Industry."

He emphasized the necessity for telephone people to take a part in politics regardless of party affiliation and urged that telephone employes get to know their elected representatives at all levels—city, county, state and national.

He also stated that telephone people must realize the importance of letting the public know of the projects and services they have to offer. He further urged them to obtain the public's support to eliminate the federal excise tax on telephone service.

R. W. Hedrick Jr., secretary of the association, discussed regulatory problems involving Independent companies and emphasized the need for compliance with the Missouri Public Service Commission requirements for filing rates, exchange area boundaries and reports.

He also gave a discussion on the similarity of the events and happen-



**The mayor and other local civic leaders recently participated in dedication ceremonies for the new $500,000 downtown general offices building erected by The Southern Nevada Telephone Co., Las Vegas. During first "open house" held by company since 1955 cut-over to dial service, visitors toured offices occupied by personnel and saw the first floor commercial office, a feature of which is the convenient "drive-in-window" for payments, accessible from the public parking area.**

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Developed by U.E., in collaboration with the Bell System, the PRESSURE-GUARD is now available to all Telephone Companies as an aid in reducing cable maintenance costs.

In the past the location of a cable leak was a matter of man hours in climbing poles and manually checking pressure points. When the pressure guard detects a pressure drop it introduces an electrical resistance . . . which indicates at a central monitoring source a cable leak and the location.

Specifications Pressure-Guard

| | |
|---|---|
| Field Adjustment Range | 0 to 15 PSI |
| Factory Setting | 2 ±¼ PSI on falling pressure |
| Pressure Response | 4 ±½ oz. |
| Proof Pressure | 30 PSI |
| Electric Rating | 0.01 amp 110V DC |
| Load Resistor | Carbon composition 330,000 OHM 1 watt |
| Take-Off Tube | Tinned Copper 6′ x ¼″ x 0.035 |
| Drop Wire | 6′ Type SJ0 #18 stranded 0.2 conductor |
| Size | 6″ x 4½″ x 2½″ |
| Approximate Weight | 1¾ lbs. |

These specifications may be modified in a great variety of ways to meet the requirements of any given application.

**UNITED ELECTRIC** *manufactures a complete line of temperature, pressure, and vacuum controls. For applications requiring custom-built units or modified standard units, call upon a UE application engineer for recommendations. Write for complete specification and pricing data on the Telephone Cable Pressure-Guard. Similar data available on all other UE controls.*

**United Electric Controls COMPANY**
85 SCHOOL STREET, WATERTOWN, MASS

ings in our country's public affairs in 1959 compared to 100 years ago.

The Cameron and Macon meetings were sponsored by the General Telephone Co. of Missouri. The Western Light & Telephone Co. was host at the Springfield meeting. Fifty-eight Independent companies, 114 exchanges, and 12 manufacturers and engineering companies were represented at these meetings. The total attendance was 312 persons.

Each afternoon a traffic and engineering conference was held. Scott Gault presided.

M. S. Bodine, chief engineer of the Capital City Telephone Co., Jefferson City, spoke on the organization of a state transmission communications improvement committee and its purposes. He announced that the state Independent company committee would meet with the Bell committee and get this program activated.

H. M. Altepeter, inventory and costs engineer of the Southwestern Bell Telephone Co., spoke on the subject "Electronics, Automation and You." In this he traced the history of the use of electricity and mechanical means to do work and perform the tasks which make our lives easier and better.

He talked about telephony of the future and of the marvelous devices by which we will communicate not only in words, but also by the interchange of data. He also described some of the new innovations in home appliances and transportation and the effects that all of this will have on society and economics. His talk was accompanied by demonstrations of the equipment used in electronic machines and equipment.

The traffic conference was conducted by George Thomas of the Southwestern Bell traffic department assisted by a panel of chief operators with audience participation. The following interesting subjects were discussed:

Changes in traffic operating practices
The mark sense toll ticket
Traffic contracts
Toll circuit engineering
Community dial office services

More than 70 persons attended each joint traffic-engineering conference. The Missouri Telephone Association district meeting committee included the following members: George A. Hearne of Kansas City, Chairman; C. W. Chastain of Princeton; and D. Coombes of St. Louis.

## Not Car, But Driver

We often read about a car going out of control. A traffic safety authority says that this is a misstatement—a car doesn't and can't go out of control unless its driver allows it to do so.—INDUSTRIAL NEWS REVIEW.

## General Provides Office System for Cal. Polio Victim

Success for the average man in possession of all his physical advantages is a difficult attainment, but even more difficult is success when the human body does not have 100 per cent functioning powers.

This typifies the case of Bud Blitzer, president of Integrated Ceilings Inc., West Los Angeles, Cal., manufacturers of plastic and aluminum grilleworks for luminous ceilings and exterior sun shades. Bud has built up a firm of international scope.

Blitzer was hit by polio in 1952. When he returned to work, after spending a year in an iron lung, Blitzer found himself working 10 hours a day, most of which was spent using the telephone.

As business built up, calls from his agents throughout the U. S., England, Cuba and the Philippines, increased. To handle these calls effectively it was obvious more individual telephone lines had to be installed, but this presented a problem! Bud, with about 5 per cent


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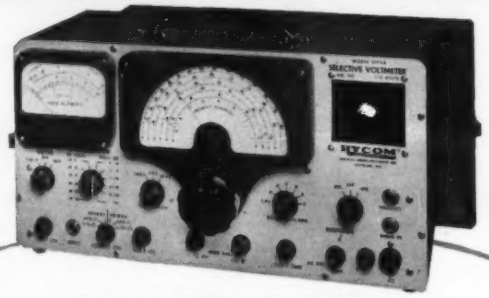
**Offers fast accurate amplitude measurements throughout the frequency spectrum of 300 cycles to 400 Kc**




Model 2174

This instrument utilizes the heterodyne principle with balanced modulation and highly selective crystal filters which achieve the high resolution needed for accurate amplitude measurements of Carrier and Microwave Sub Carrier channels.

**Direct reading in DBM for 135 and 600 ohm circuits or bridging.**

**SPECIFICATIONS**
**Model 2174 and 2174-A**

Frequency Range: 300 cycles to 400 Kc. Level:—72 dbm to + 32 dbm (full scale) at 600 OHMS Accuracy: ± .5db from —80 to +32 dbm; 1 to 400 Kc. Selectivity: 6db down 80 cycles off: 60 db down 480 cycles off. Wider crystal filter and demodulator for monitoring SSB, AM, and FM—internal speaker and headset jack. Spurious Response: Below 60db, low intermodulation: Below 60 db. Power Requirements: 115V, 50/60 cycles—48 Watts. Weight, 28 lbs.

RYCOM INSTRUMENTS

*A Division of:*
**RAILWAY COMMUNICATIONS, INC.**
9351 E. 59th Street Dept. 1-B, Raytown 33, Mo. Phone: FLeming 3-2100

use of his hands, did not have the strength to push the buttons permitting incoming calls to reach him. That's when he called the General Telephone Co. of California and asked if they had a solution.

A day later Robert E. O'Reilly, commercial representative for the company, went out and discussed the matter with Blitzer. It was apparent to O'Reilly that it needed considerable study. More technical knowledge had to be called in to provide a telephone set-up that would be convenient and offer the compensations Blitzer's physical limitations required.

O'Reilly called Al Snyder, PBX man for General, who, after considerable study and consultation devised a 1A key wiring plan adapted to push control, so that when Blitzer wished to receive incoming or place outgoing calls, he could do so with a minimum of effort.

Now, when Blitzer desires to use this system, by a slight pressure with his knee, he can either contact his secretary by intercom; call on the automanual line to the local or long distance operator in West Los Angeles directly without dialing; activate his speakerphone when he does not wish to use

**A unique telephone set-up is explained to Bud Blitzer, (left), president of Integrated Ceilings Inc., West Los Angeles, by Al Snyder PBX man for General Telephone Co. of California. By using his knees, Blitzer, a polio victim with 5 per cent control of his hands, can depress buttons for outgoing and incoming calls on the specially constructed push button control board.**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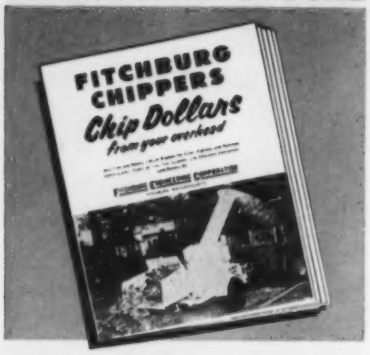


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his hands for holding the telephone; and depress buttons for his three incoming lines, enabling him to receive calls from all over the world. He also has a "hold" button permitting him to retain a party on one line, while he answers a call on another telephone.

## S. D. Smith Heads SW Bell Independent Relations

Spencer D. Smith has been named Independent company relations manager for the Southwestern Bell Telephone Co.

He succeeds Donaldson Coombes, Independent company relations manager since 1930, who retired after 40 years of service on Sept. 30.

S. D. SMITH

In his new job, Mr. Smith will coordinate telephone operations and administrative affairs between Southwestern Bell and the Independent telephone companies in Missouri and western Illinois.

Prior to this appointment, Smith was a personnel development supervisor for the company and worked in its management development program.

He started his telephone career as a salesman with Southwestern Bell in St. Louis in 1933.

He held a number of other positions in the company's commercial department and was named a district manager in St. Louis in 1951, where he remained until transferred to the personnel department in 1957.

Smith served with the U. S. Air Force during World War II with the rank of major.

He is a graduate of the Garden City, Mo., high school and of the University of Missouri.

Mr. Coombes has spent his entire career with Southwestern Bell in St. Louis, but is well known in Independent telephone company circles throughout Missouri and western Illinois.

Since 1930 he has been responsible for co-ordinating telephone operations and administrative affairs between

DONALDSON COOMBES

Southwestern Bell and some 270 Independent telephone companies in Missouri and Illinois.

Coombes started with Southwestern Bell in 1919 as a student engineer. He was named Independent company relations manager for Missouri in 1930.

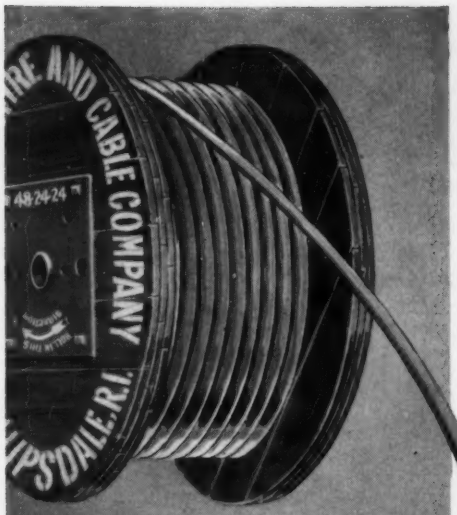
He has been a director of the Illinois Telephone Association since 1930 and for the past 25 years, has been coordinator for the annual district meetings of the Missouri Telephone Association.

## Neb. Cut-Overs Mean Open House, Special Displays

Following conversion of its Auburn, Neb. exchange to dial operation recently, The Lincoln Telephone & Telegraph Co. held an open house there for its customers in eight exchanges in the county. In conducted tours 1,221 visitors were shown the new building, its step-by-step Strowger equipment, SATT equipment for Direct Distance Dialing (DDD), together with other equipment, and various demonstrations and exhibits.

This open house was one in a series of such activities which LT&T holds each time a major exchange is converted to dial operation. Recently, open houses were held at Beatrice, Wahoo, David City and Ashland, and other similar events are planned.

At Auburn, demonstrations of electrically operated units were given on direct distance dialing and local dialing, with question and answer periods

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*c/o Chase Copper & Brass Co.

# TBM SERVICE ENTRANCE MAST for OUTDOOR TELEPHONE BOOTHS

Patent Pending

Model TBM Mast provides complete service entrance facilities for outdoor telephone booths with the definite plus advantages of lower cost and easier installation. Raises power lines for specified ground clearance.

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**LOOKS BETTER** The TBM Mast is engineered for the job. Adds to the appearance of any booth.

**LASTS LONGER** Heavy gauge steel tubing used throughout for life-time service. Only heavy duty fittings used.

**COSTS LESS** Actual installations show savings up to two-thirds over conventional installations.

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following. Exhibits included a map of the direct distance dialing area of 68 cities in southeast Nebraska, a peg board merchandising display of color telephones and other equipment, and historic wall and desk telephones. One display showed, in eight steps, the transition of the telephone from Alexander Graham Bell's original model to the present color telephone.

The merchandising display was developed recently by the company for more or less permanent use at open houses, home shows and other exhibits. It is made of peg board in four sections which are hinged. This makes it self-supporting and it can be folded for easy packing for shipment or storage. Attached color photographs are used to demonstrate use of telephones in various areas of the home. Slanting boards with metal fasteners are used to hold telephones and other equipment on the peg board. A sign is attached to the top of the display and the peg board is painted a neutral gray to accent the color in the telephones, photograph blow-ups and signs.

Historic and modern wall color telephones are mounted on plywood panels with detachable metal legs. Specially designed packing cases are used for shipping and storage.

Customers in the county were sent printed invitations and the open house event was publicized in local newspapers. A large canvas banner was devised to hang under the marquee of the building. The banner has a detachable piece of canvas which is attached to the banner itself by cords through grommets. When attached, the banner reads, "Open House, (The date it will be held) 1:30 to 9:00, Everyone Welcome."

This is then displayed about a week before the open house. On the day of the open house, the detachable piece is removed so the banner reads, "Open House Today." The banner is stored for future use. A new detachable "date" piece is made for each succeeding open house.

At the conclusion of the tours, the visitors were served coffee, pop and cookies by ladies of a local church group. Souvenirs for men, women and children were distributed.

In its larger exchanges, LT&T invites civic clubs and other groups for open house previews, and special programs are arranged. During school terms, school authorities dismiss classes for a short time so students may attend the open house in supervised groups. Such school visits are held in the morning before the public open house hours begin.

## Book Review

**"TELECOMMUNICATIONS ECONOMICS" by T. J. Morgan; 452 pages; $7.00.**

Not only must telecommunications engineers know whether or not something can be done, they must also determine whether a company can afford to do it.

In this book, T. J. Morgan, of the British Post Office engineering department, points out that plans must make the best use of available capital while taking into account the complex relationships involved with operating and

**Lincoln (Neb.) Telephone & Telegraph Co. officials who attended company's recent open house after cut-over at Auburn, Neb., are shown posing before exchange building. They are, left to right: Lloyd W. Cleveland, general traffic superintendent; Merle M. Hale, vice president in charge of operations; Clyde Burge, southern district manager; and K. L. Lawson, general commercial superintendent.**

# If you want maximum service Specify T-C Pressure-Treated Poles

. . . Then rest assured *you* have poles with the best in preservation. Here's why . . . each step in our production is subject to precise and accurate control, timber selection, manufacture, moisture removal and treatment. And, only the finest chemical preservatives are used. You get uniform high quality, the best in preservation and maximum service with the T-C brand on your poles.

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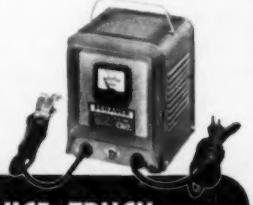
# SCHAUER CHARGERS



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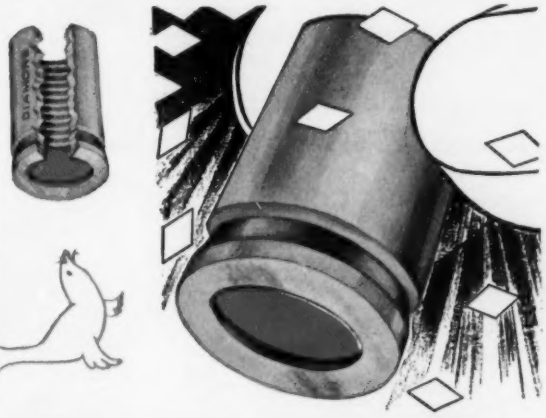


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says J. A. WRIGHT, Vice President

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GARWOOD, NEW JERSEY

maintenance costs, interest, depreciation, and revenue.

The book gives an application of the general principles needed to investigate the economic merits of alternative engineering schemes.

He stresses that services cannot be stored in the same way as manufactured goods. The service organization, therefore, must be able to meet wide variations in demand, although the cost of providing the service remains reasonably stable.

Special consideration is given to the layout of multi-exchange systems for rural areas and urban districts, as well as some of the difficulties involved in the economic study of replacement schemes where the plant has little or no market value.

The economic routing of telephone traffic within large, multi-exchange systems, and between systems, is also covered. Methods to be adopted when carrying out economic studies are considered.

He describes comprehensively many of the British Post Office's procedures generally applicable to the economic engineering of a telecommunications system.

Sufficient information is included for cost studies to be worked out without reference to other sources of information, and although the examples given are hypothetical, there is good justification for the relative values employed.

Chapters on depreciation accounting, the use of graphical methods and formula for economic studies, planning for future requirements, and the use of capitalized costs are among those included.

This book is available from MacDonald & Co. (Publishers) Ltd., 16 Maddox St., London W. 1, England.

## General of Kentucky Makes Management Changes

The General Telephone Co. of Kentucky, on Sept. 25, through its President, Harry J. Huether Jr., announced the following management changes:

M. V. SHEPHERD

Marston V. Shepherd has been appointed western division manager for the Kentucky company, effective Oct. 1. He has been associated with General

J. A. REITZE

Telephone for the past 11 years and has held several management positions, among them eastern and central division manager and most recently public relations director.

Jack A. Reitze, present western division manager, is being transferred to the general offices of the company at Lexington as general traffic manager, replacing Rollie D. Graves, who is being transferred to the General Telephone Co. of California. Mr. Reitze began his telephone career in 1949 as traffic engineering clerk with the Home Telephone & Telegraph Co. in Fort Wayne, Ind.

Ralph F. Kessinger, director of personnel for the company, will assume the additional duties of public relations director vacated by Mr. Shepherd.

## Graybar National Sales Personnel Attend GE Meet

Thirty-eight members of the Graybar Electric Co.'s national sales organization attended a four-day General Electric Co. sponsored sales meeting, Oct. 4-8, at Lynchburg, Va.

The purpose of the meeting was to acquaint the Graybar electronic sales managers with G. E. mobile radio & microwave communications products.

Graybar was recently appointed national distributor for these products designed for use in the Independent telephone company and railroad markets.

The men who attended the sales meeting represented the major 19 Graybar districts, including branches in 137 principal cities. The group was headed by J. W. LaMarque, general communications sales manager, and L. J. O'Connell, manager, transportation & electronic sales, Graybar headquarters in New York City.

## Bishop Names Munhall for Western New York Sales

The Munhall Co., 170 Franklin St., Buffalo, N. Y., has been appointed by Bishop Mfg. Corp., Cedar Grove, N. J., as its sales representative in the western portion of New York state. Headed by Douglas J. Munhall, the sales firm has been serving industry in their area for more than 50 years.

Bishop products to be sold through the Munhall company include synthetic and rubber insulating tapes and other insulation materials for the telephone industry and other markets.

## Acton Laboratories Names Bower General Manager

Leroy C. Bower Jr. was recently appointed general manager for Acton Laboratories, Inc., a subsidiary of the Technology Instrument Corp., producers of electronic laboratory test instruments.

Formerly sales manager, Mr. Bower joined Acton Laboratories in 1957 as manager of sales and advertising.


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Dierks Forests, Inc., Wood Preserving Division, 810 Whittington Ave., Hot Springs, Arkansas. Southern Pine select poles, all sizes and lengths, pressure-treated, creosote or penta. Also creosote-2% penta mixture. Prompt shipment.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

**TEST BOARDS**

*Wire Chief's Test Boards* — (5 only), Western Electric, new. 5½ ft. x 19 in. steel rack (self supporting).

*Jack Field*, contains: 23 rows of 30 jacks #239A, W.E. (double cut-off) arranged for both sides of circuit for testing each way and separate jack for patching. Also has Teletype and trunk test jack-drops. Each jack panel wired to its own screw-terminal at rear (with solder lug).

*Key Shelf*, 30" high, contains: Wheatstone bridge (Leeds & Northrop #5430, type U), Volt-Milliammeter & keys for all tests. (Illustrated manual, loaned free.)
$3,000 value ..... only $1,000

*EE 65 F portable W.C. Test Set* with Ohm-voltmeter & LB phone ckt. for testing LB lines & some CB tests.
With manual, new ..... $25
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*TEST BOARD EQUIPMENT* (parts), new. Jack mountings—19"—23", some wired, with jacks to terminals.
*Test Jacks*—single & dual types. W.E. #410A dual, new ..... $1.25
Equivalent type, new ..... $1.00
(Most all W.E. types in stock.)
*Terminal blocks*, MDF, etc. ..... 6¢ pr.
*Keys*—lever-turn-push.
*Lamp sockets*—individual—strip.

*Equipment Racks:* 19"-23" open types, all sizes. 7'x19" W.E. cabinet racks with full door front & rear, center mounting for equipment, drilled & tapped—welded steel, grey finish.
New ..... $50 ea.
19"x42" steel rack, front mtg. single door, knocked down ..... $25

*Let us quote on your needs from our (largest) stock.

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SWITCHMAN—must be fully qualified to maintain step equipment. Reply sending complete résumé to C.O.E. Supervisor, Box 705, Ft. Walton Beach, Fla.

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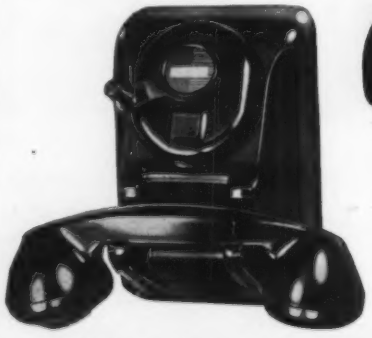

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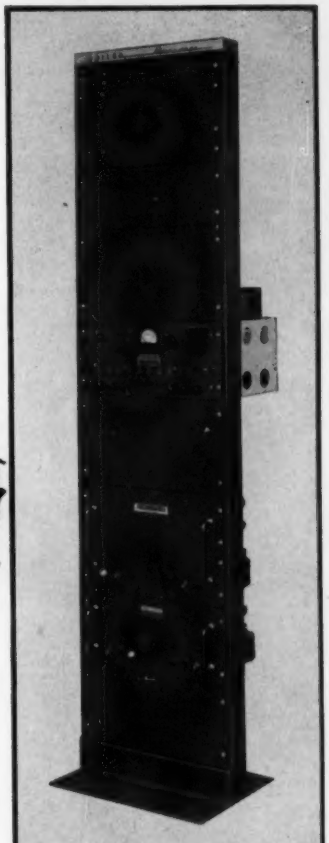

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